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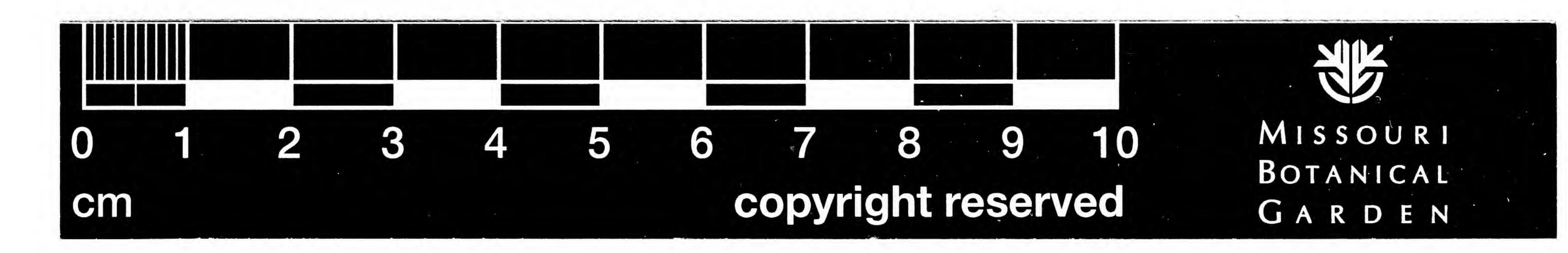
The Mean and Extreme Daily TEMPERATURES in St. Louis for 47 Years,

AS CALCULATED BY DAILY OBSERVATIONS.

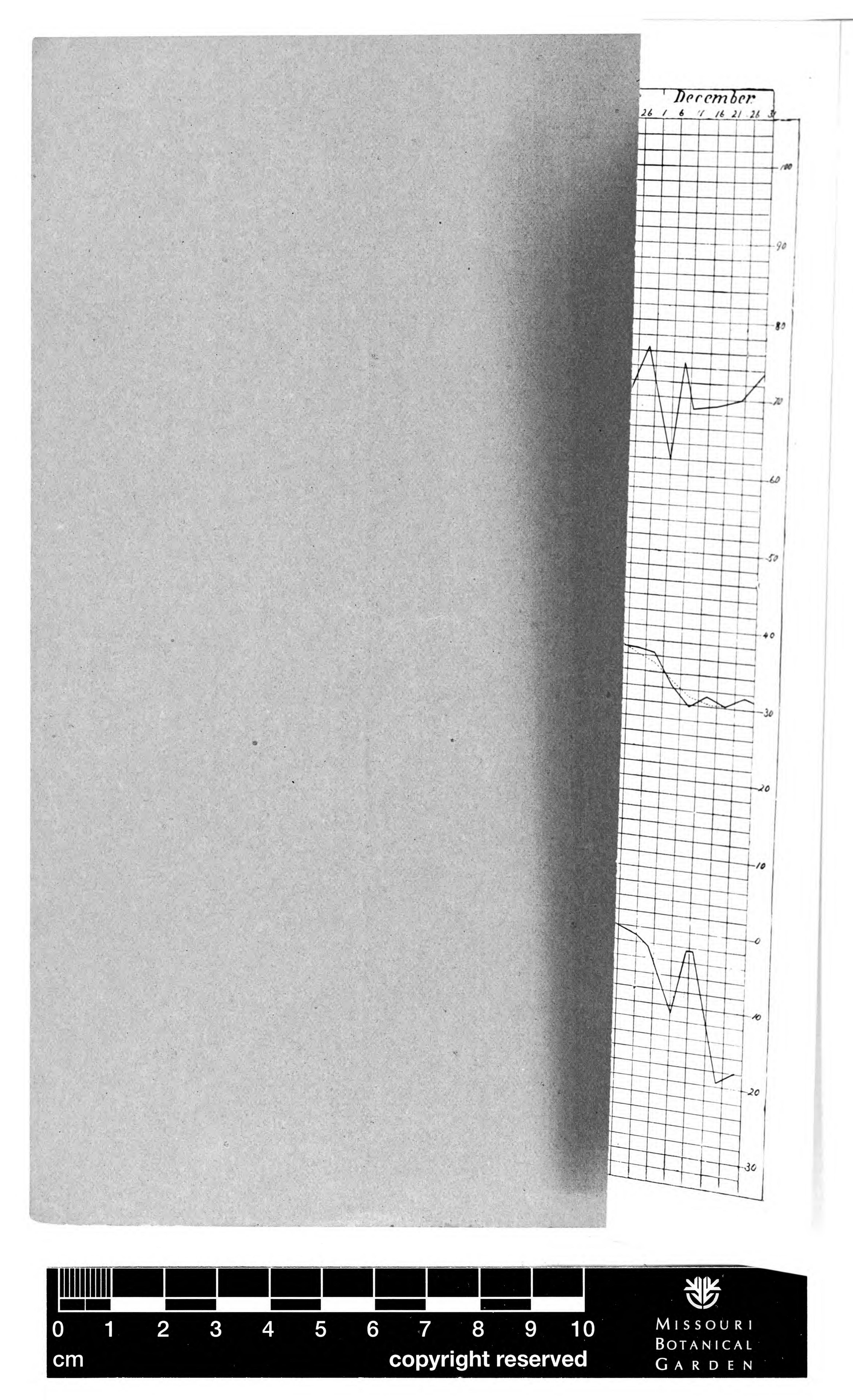
By DR. GEORGE ENGELMANN.


From the Trans. of the St. Louis Acad. of Science, Vol. IV., No. 3.

November, 1883.

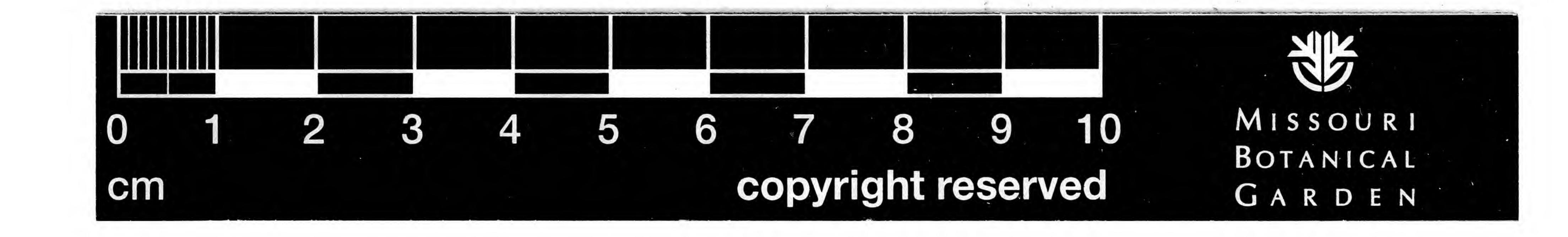








MISSOURI BOTANICAL GARDEN



The mean and extreme daily Temperatures in St. Louis during forty seven years, as calculated from daily observations,

By Dr. GEORGE ENGELMANN.

Half a century has passed since I began to study the meteorology and climatology of this neighborhood, and since the year 1836 I have made regular meteorological observations, first on temperature, the winds and the condition of the sky, and soon afterwards on atmospheric pressure, rainfall and humidity.

I give here the results of my thermometrical observations, which I consider as the most important and most interesting of the series. They comprise, to be sure, only forty-seven years, and I might have waited until at least half a century was completed; but the results would scarcely have been different, and the task then perhaps problematical of accomplishment.

The observations were made within the city of St. Louis, and can thus not claim precision for this whole region. St. Louis, to be sure, was, when they commenced, a small town of perhaps 15,000 inhabitants, while now, at their completion, it is a large city of probably 400,000, with the necessary accompaniment of brick and stone, and especially with the smoke of thousands of chimneys, furnaces and factories, and the almost total absence of verdure. It has been held by some, that these influences had little effect on temperature, but that brisk breezes would soon dispel smoke and equalize temperature. This, however, is not quite so, and direct thermometrical comparisons prove that the extreme temperatures, and, remarkably enough, even the extreme heat, are less marked in the city than in the country, and that the mean temperature is higher in the city than in the country (Trans., vol. ii., p. 70); but, aside from instrumental observation, the state of the vegetation proves it every spring and fall, when we find in our city gardens the plants uninjured on mornings when in the country they have suffered from late or early frosts.

St. Louis lies very nearly in the centre of the Mississippi Valley, 600 miles north of the Gulf of Mexico and just as far south of Lake Superior, about 500 miles west of the Alleghanies and 800 miles east of the Rocky Mountains; its Washington University, one



mile west of the river, lies in Lat. 38° 38′ 03″ and Long. 90° 12′ 15″; the low-water mark of the Mississippi is 379 feet above the Gulf, and the foot of Market street (City Directrix) is 413 feet above the same.

My observations were made in the first twelve years on the south-east corner of Second and Chestnut streets, only two blocks from the river and 75 feet above low-water mark of 1863; for the next 22 years on the south-west corner of Fifth and Elm streets, five blocks from the river and 110 feet above low-water mark; and for the last 13 years on the north-west corner of Thirtieth and Locust streets, two miles from the river and 177 feet above low-water mark. When I was absent from the city Dr. A. Wislizenus and lately Mr. B. D. Kribben have kindly filled the gaps.

My instruments were at first such as could then be obtained here; soon I imported correct thermometers from Europe, and for nearly 40 years I used those made by Jas. Green, then of Baltimore, and soon afterwards of New York.

For many years the observations were made at different periods of the day, and especially at hours when the extremes might be expected to occur, viz. at sunrise and at 3 p.m.; and the maximums and minimums were selected from all of them, often eight in a day, at whatever hour of the day they were found. Differential thermometers were observed only since the last 12 years. Thus I may not always have noted the absolute extremes of each day, and my tables can claim only approximate reliability; I give them for what they may be worth, but I can assure my readers that they furnish a record elaborated with zeal, conscientiousness, care and assiduity, and for a length of time such as probably few others, if any, exist in this valley.

The arrangement of the tables explains itself. The first two columns represent the means of the 47 minimum and of the 47 maximum observations made on each day of the year, and the third column the mean calculated from the two former. The next "Min." column gives the lowest and the "Max." column the highest temperature ever observed on that day; the column of years next to these gives the year in which these extremes did occur. The last column represents a supposed—or estimated—true mean for the day after eliminating excessive extremes.

The year has been divided into 73 periods of 5 days each, the

means of which are printed in full-face type, to distinguish them. It will be seen, however, that the means of these periods do not progress, rise and fall, much more evenly than the single daily means; compare, e.g., the mean of Jan. 31st to Feb. 4th, which is so much lower than the mean of the foregoing or the following five days that one might suspect a regular and normal decline of temperature in these days, and not a mere accident.

A few facts must strike every one who examines the tables. The first is, that a time even as long as 47 years fails to give us anything approaching absolute and reliable means; and we come to the painful conclusion, that observations even continued for double that time, or for a century, may not yet obtain that desirable object. It seems that the excessive extremes of one or of a few days such as we often observe in our climate of extremes, especially in the winter season, will influence—or, I may say, vitiate—the means of a long series of observations; and the question with me arises, whether such extremes ought not to be eliminated from the series, and thus truer means be obtained. At the same time we may justly be astonished that from such heterogeneous data so much order and system result—which gives us hope that we cannot be quite on the wrong track.

Another fact, which strikes us in looking over the tables, is that the mean temperatures do not increase and decrease evenly, but sometimes quite rapidly, and at other times they may become almost stationary for a time. These points come out most strikingly on a diagram which embodies the essential parts of the results and shows the daily progress of the temperature. Thus we find very little change from the middle of December to the first part of February, though the temperature proves to be lowest from January 4th to 13th; then we notice a rapid rise from Feb. 6th to 20th, a slower rise to the middle of March, then a rapid one to the end of the month; in the forepart of April a slow and after the middle of that month a very marked one; then follows a tolerably even, at last quite slow, rise to July 9th, when between this date and the 18th the greatest elevation of the curve is obtained. After that the mean temperature falls slowly to the middle of August, followed by a more rapid decline to the end of September; after a slight pause in the first week in October, a more rapid fall takes place for the following two weeks and a

slighter one in the two weeks succeeding them. After that the temperature sinks rapidly to about Dec. 10th, from which time till the beginning of February the changes are not very marked.

The mean temperature of April 17th to 19th and from October 12th to 17th correspond with the mean of the year.

The tables, and still more distinctly the diagram, show us also that the extreme highest and lowest temperatures diverge most in winter and least in summer, and that their values are much more variable in the former than in the latter season. The possibilities of range from the middle of December to the middle of March are 80 to 95 degrees, while in June and July they amount only to 40 or 45 degrees.

The same law is found when we compare the actually observed lowest minimum and highest maximum of every month; their divergence is greatest in January, and least, not much more than half, in July.

	Min,	Max.	Range.		Min.	Max.	Range.
January				July	53.0	104.0	51.0
February				August		104.0	
March				September		102.0	67.0
April	18.0			October		91 0	71.5
May	29.0	97 5	68.5	November	-0.5	81.5	82.0
June	43.0	101.5	58.5	December	-19.5	72.5	92.0

Nearly the reverse is the case—i.e. the range in winter is much smaller than that in summer—if we compare the difference of the average daily minima and maxima for each month:

```
January...
13.27 | April.....
18.29 | July .....
18.24 | October ...
18.00

February.
14.72 | May......
18.77 | August....
17.75 | November 14.06

March....
16.40 | June .....
18.14 | September 19.05 | December.
11.97
```

The range, it will be seen, is, on the whole, least in the cooler and greatest in the warmer months of the year; but this difference is not due to the lower or higher temperatures of those months, for it will be seen that in December the range is the smallest (smaller than in January) and in September greatest (greater than in July). This variation in the range of maxima and minima is undoubtedly owing to the condition of the sky in the different months. Gloomy weather prevails in the beginning of winter, and a clear sky with abundant evaporation, and thus a reduction of night temperature, in the autumn. The little table can give us an indication of the prevailing weather in the different months. Thus the difference, and its cause, the clearness of

the sky, rises from December gradually till May, falls a little in June and July and more in August, rises to its highest point in September, is yet high in October and then falls rapidly till December, to rise again in January.

The temperature of our continental locality shows a great difference from that of the western coast of Europe; as a convenient example we may refer to the temperature of London. Their winters are warmer from the latter part of November until the beginning of March, and their summers much cooler from this period to the latter third of November; and the mean is much higher here.

Jan. Feb. Mar. Apr. May. June. July. Aug. Sept. Oct. Nov. Dec. year. St. Louis.. 31.8 35.4 43.7 56.2 66.3 74.7 79.2 76.8 69.0 56.1 42.8 33.4 55.4 London... 37.2 39.3 42.7 48.1 54.5 60.8 63.6 62.0 57.6 50.4 42.7 39.7 49.9 Difference. +5.4 +3.9 -1.0 -8.1 -11.8 -13.9 -15.6 -14.8 -11.4 -5.7 -0.1 +6.3 -5.5

MEAN AND EXTREME TEMPERATURES IN ST. LOUIS FROM 1836 to 1882.

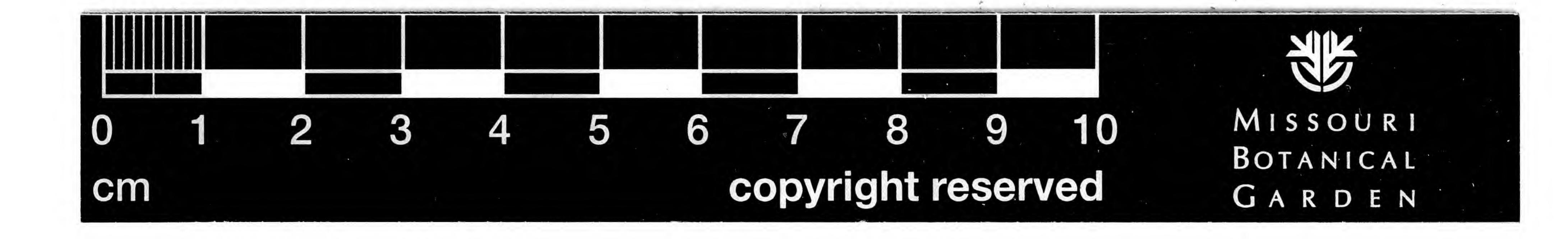
1836-1882		Values for Day.	or each		e Maxima a on each Day		na observed ear.	Sup- posed true
	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	Mean
Jan. 1	23.55	36.77	30.16	-22.5	1864	68.0	1876	31.5
2	25.35	37.97	31.66	-13.0	1879	65.5	1855	31.3
3	25.54	38.55	32.04	-15.5	66	66.5	1874, 1880	31.0
4	23.95	35.82	29.88	- 6.0	66	63.5	1880	30.5
5	23.45	39.22	31.33	- 8.5	1864	62.0	1876	30.2
	24.36	37.66	31.01	-13.1		65.1		30.9
6	23.76	37.63	30.69	- 9.0	1879	64.0	1880	30.0
7	22.33	33.95	28.14	1.0	1881	64.0	1839	29.4
8	22.75	34.61	28.68	- 6.0	1877	68.0	1876	29.0
9	22.65	35.48	29.06	-18.0	1875	65.5	66	29.0
10	22.67	34.82	28.74	-11.0	1881	70.0	1839	29.5
	22.83	35.29	29.06	- 9.0		66.3		29.4
11	25.42	39.20	32.31	- 1.0	1881	71.0	1839	30.0
12	26.69	39.27	32.98	2.0	1852	65.0	1863	30.2
13	24.61	36.81	30.71	0.0	46	59.0	66	30.6
14	25.61	38.11	31.86	-12.5	1881	64.0	1848	31.0
15	26.71	39.67	33.19	_ 2.5	1875	66.0	1847	31.4
	25.80	38,61	32.21	-60		65.0		30.6
16	24.03	36.27	30.15	2.0	1841	63.0	1845	31.8
17	21.09	34.27	27.68	-11.0	4 6	64.0	1842	32.0
18	21.65	34.32	27.98	-12.5	1857	66.0	66	32.0
19	23.63	38.09	30.86	-12.0	1852	61.0	1843	32.0
20	27.83	39.54	33.68	- 1.5	1866	64.0	66	32.0
	23.64	36.49	30.07	- 7.0		63.6		31.9
21	25.97	38.79	32.38	- 3.0	1854	67.0	1843	32.0
22	23.84	39.19	31.52	-2.5	1857	62.0	1858	32.0
23	24.63	38.36	31.49	.0.0	1854	62.0	1864	32.0
24	25.57	39.64	32.60	2.0	1873	65.0	1860	32.2
25	27.26	41.63	34.44	- 55	1840	65.0	1864	32.4
	25.45	39.52	32.48	-1.8		64.2		32.1



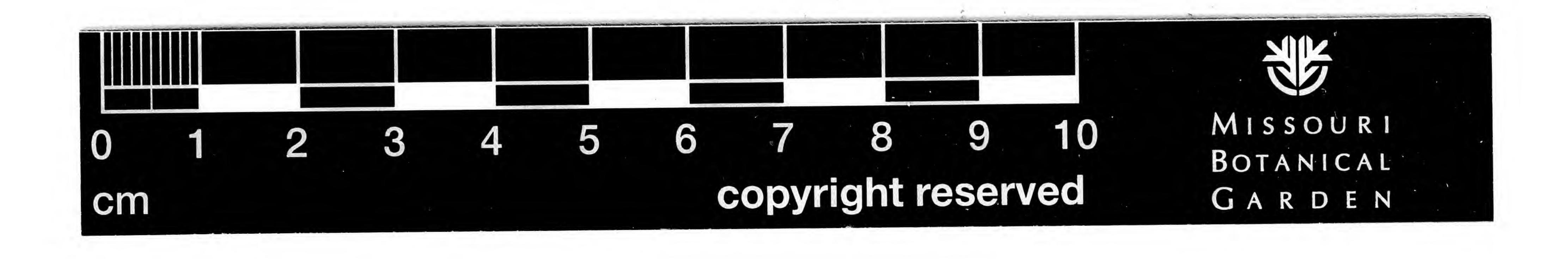
836-1882		Value for Day.	or each	Extre	me Maxima an on each Day o			Pos
1002	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	Me
an. 26	26.76	40 36	33.56	1.0	1865	71.5	1843	32
	26.96		33.24	-0.5	1873	72.0	1864	32
	24.85	39.15		- 6.5	10.0	67.0	1001	
				-23.0	66	64.5		32
0.745.745.1							1852	32
			32.94	-2.0	1856	64.5	1842	32
200 000 000	The state of the s			- 6.2	A factor of the	67.8		32
			31.58		1875	65.5		32
			30.26		1836	70.0	1854	32
(4.1)		35.77			1873	56.0	1846	32
	21.71			-15.0	1856	62.5	1852	32
		THE RESERVE OF THE PARTY OF THE		-11.0	66	61.0	1837	33
	23.11	36.68	29.89	- 7.2		63.0		32
5	24.67	39.29	31.98	- 3.5	1856	61.0	1837	33
6	26.00	41 04	33.52	3.0	1843	67.0	1855	33
1.2	26.08		33.63	_ 3.5	1872, 1875	65.0	1851	33
-	24.74		32.36			66.0	1847	33
	24.37		32.21	-5.0		72.0	1876	
			32.47				1010	33
	25.92	A STATE OF THE PARTY OF THE PAR	33.74			66.2	1000	33
4.0 6.0					1841	73.0	1876	33
The second second	29.98	43.93	36.95	2.0		73.0	1845	33
	29.00	43.44		2.0	- 66	70.5	1882	33
	29.06				1838	69.0	1867	34
	24.71			-3.5	1866	64.0	1857	34
574 555			34.73	1.2		69.9		33
15	26.53	41.09	33.81	-9.5	1866	68.0	1848	34
16	26.07	42.59	34.33	- 5.0	66	63.5	1857	34
17	28.03	41.18	34.60	- 4.0	1838	74.5	46	34
18	28.05	42.39	35.22	_ 2.5	1849	65.5	1873	34
19	30.26	44.57	37.41		1838	76.0	1859	35
	27.79			- 3.2		69.5	1000	34
						68.5	1850	11/10/2012
Logo, Burn Harris	30.33		37.80	-4.5		68.0		35
	31.82		39.39		1858		1836	36
.25.35.71		44.71		0.0	1000	68.5	1861	36
			37.64			69.5	1851	37
					1873	69.0	1880	37
The state of the s				- 0.1		68.7		36
			38.53		1855	67.0	1876	38
40341		48.91		2.0		68.5	1880	38
		45.46	The state of the s	5.0		73.5	1876	38
		47.02				74.0	1861	39
		49.02		10.0	1843	79.5	66	39
ALC: N			39.25	6.9		72.5		38.
11000	31.36		38.66	8.0	1843	76.0	1861	39
3	29.29	43.89	36.59	0.0	1848	78.0	1842	40
4	29.50	44.54	37.02	6.0	1875	75.5	1882	40
5	30.62			8.0	1848	71.0	1855	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
				4.5	1869	76.5		40
			38.67		1000		1860	41
		51.60		10.5	1055	75.4	1000 1000	40.
	34.49		42.40		1857	77.0	1853, 1879	
7.57				13.5	1875	77.0	1879	41
	35.01	48.18		6.0	1877	78.5	1842	41
		49.52		10.0	1856	79.5	1279	41
	34.55	The state of the s	42.11	7.0	1836	69.0	1848	42
*	34.43	49.85	42.14	7.4		76.0		41.

36-1882	Mean	Value fo Day.	r each	Extrem	for each Day	The state of the s	
30 1002	Min.	Max.	Mean.	Min.	Year.	Max.	Year.
or 19	34.82	50.86	42.84	11.5	1836, 1857	71.0	1839, 1861
	34.24	50.64	42.44	5.0	1867	75.0	1850
				1.0	1001		
135155	34.51	50.55	42.53			76.5	1875
200	33.87	48.89		7.5	1870	80.5	1854
	34.14			9.0	1843	77.5	1868
	34.31	50.19	42.25	6.8		76.1	
17	33.49	52.07	42.78	10.5	1879	79.0	1842
18	34.86	52.32	43.59	15.0	46	84.0	66
19	36.09	54.82	45.45	18.5	1875	84.0	66
	36.91	52.52	44.71	14.0	1855	84.0	66
-		50.68	7 3 2 3 3 3 1	7.0	1876	76.0	1878
		The second of th	43.79	13.0		81.4	
			44.80	13.0	1843	76.0	1857
				7.5	1040	82.5	1868
4	37.09	55.48	46.28	12.0			
*	36.90	54.30	45.60			83.0	1842
	37.21	53.76	45.48	13.0		82.5	1852
136.51	37.69	54.92	46.30	13.5	1873	78.5	1838
1			45.69	11.8		80.5	
27	39.16	56.81	47.98	23.5	1850	85.0	1838
28	39.77	57.31	48.54	18.0	1855	83.5	1879
29	40.42	58.31	49.36	23.5	1876	86.0	1842
			49.49	28.0	66	84.0	1838
		57.34		25.5	1856	84.0	66
		57.53		23.7		84.5	
		57.25		24.0	1881	81.5	1882
pr. 1	40.92		51.02	24.0	166	85.0	66
2		62.44	53.55	24.5	1879	86.0	11
3				23.0	1013		66
4	44.00	59.67	51.83			85.0	
	42.79		51.80	22.5	1857	88.5	1871
			51.33	23.6	100	85.2	
6				18.0	1857	89.0	1871
7	44.77	63.98	54.37	29.0	1880	85.5	1860
8	45.59	60.96	53.28	24.0	1845	82.5	1836
9	43.84	61.86	52.85	27.0	1857	84.0	1844
10	45.07	61.94	53.50	28.5	1836, 1874	87.0	
	44.57	62.33	53.45	25.3		85.6	
		62.53		27.0	1857	83.0	1842
	45.35			26.0	66	84 0	1856
	45.33		54.46	32.0	66	88.0	1845
75773	45.03	63.26	54.14	28.5		84.0	65
1 1			53.27	23.0	1850	82.0	1856
	44.52				1000		1000
			53.79	27.3	10	84.2	1015
	45.62		53.94	26.5	1875	91.0	1845
_17	45.11	64.55	54.83	20.5	6.6	93.0	1855
18	45.78	64.34	55.06	26.0	66	99.0	6.6
19	47.20	66.47	56.83	29.0	1857	83.0	1847
	48.47			34.0	4.6	85.0	1836
1,223,034			55.77			90.2	
		69.01		36.0	1857, 1875		1867
		. Ki	60.53		1875	87.5	1842
	49.88		59.89	31.5		87.0	1842, 1854
24		The state of the s	59.58 61.35	34.0	1874 1875	88.5 93.0	1854
~-			1 1 1 1	22 5	IX/I X/S		IXIX IXAA

1836 1882		Values for Day.	or each	Extre	ne Maxima an on each Day			Sup- posed true
1000 1002	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	Mean
Ap. 26	51 20	70.53	60.86	33.5	1873	88.0	1872	60.0
27			60.30	37.0	1857	93.0	1838	60.0
	51.21	68.71	59.96	34.0	1854	83.5	1845	60.0
	50.87			33.0	1874	89.5	66	60.0
	50.68		59.87	32.0	1877	92.5	1855	60.0
			60.20	33.9		89.3		60.0
May 1				35.5	1877	91.5	1836	60.0
	A DESCRIPTION OF THE PROPERTY	68.34	The state of the s	29.0	1851	87.0	66	60.2
	51.05			38.0	1841	88.5	1849	60.4
	53.60	71.04	62.32	37.0	1877	89.0	1860	61.0
7				37.0	1851	91.5	66	6i.4
			61.06			89.5		60.6
		71.47	The second of th	37.5	1863	88.0	1872	61.8
	53.77			35.0	1867	88.0	66	62.0
	54.05			38.0		88.0		62.5
100	54.40			39.0	66	88.0	46-	63.0
		73.16		40.0	1838, 1871	89.5	1844, 1863	63.5
4.000			63.23			88.3		62.5
		72.78	A SECOND TO ASSESS VALUE OF THE PARTY OF THE	39.0		91.5	1844	64.0
	55.17			39.5		91.5	1836	64.5
		75.17		41.5		90.0	1862	65.0
		74.75		42.0	"	97.5	1836	65.5
0.000			65.57	40.5	46	93.0	66	66.0
			65.05			92.7		65.0
100		75.52		40.0	1837, 1875	The state of the s	1851.	66.5
17	56.01	73.47	64.74	42.0		91.0	1853	67.0
18	55.19	75.27	65.23	42.0	66	87.0	1836, 1870	67.5
19	57.24	77.30	67.27	43.0	1853	89.5		68.0
20	57.61	77.34	67.47	42.0	1852	90.5	1836	68.2
	56.55	75.78	66.17	41.8		90.0		67.4
21	58.76	76.31	67.53	43.0	1857	96.0	1870	68.4
22	58.53	78.02	68.27	40.0	1838	97.0		68.6
23	59.26	77.68	68.47	44.0	1867, 1876	90.0	1839, 1856	68.8
		78.80	THE PART OF A COUNTY OF THE PARTY OF THE PAR	45.0	1851	92.5	1873, 1879	69.0
		77.40		44.0		93.0	1860	69.5
			68.46	43.2	And the second s	93.7		68.8
			70.73	48.0	3 2 4 4 4 4 4 4	93.0	1860	70.0
			69.85	48.0	6.6	94.0	1874	70.2
			70.52	45.0		91.0	1848, 1851	70.4
		79.24		44.0	1866	91.0	1852, 1879	70.6
		79.94		44.0		4 6	1841, 1854	70.8
			70.41			91.8		70.4
	62.14			52.0	1856	97.0	1871	71.0
June 1				49.0	1843	91.0	1845, 1852	71.0
		80.70		49.0	1838	94.0	1852	71.2
		80.12		47.5	1879	93.0	1856	71.4
		79.06		44.0	1859	94.0	1841	71.6
			70.94	49.3		93.8		71.2
		79.45	The state of the s	43.0	1839	93.0	1871	71.8
	62.57			43.0	1838	93.0	1836, 1874	72.0
		81.34		50.0	1854	95.0	1874	72.2
		81.95		49.0	10-0	96.0	1836	72.4
		81.18		51.5	1852, 1877	99.5	66	72.6
	62.71	81.16	71.93	47.3		95.3		72.2

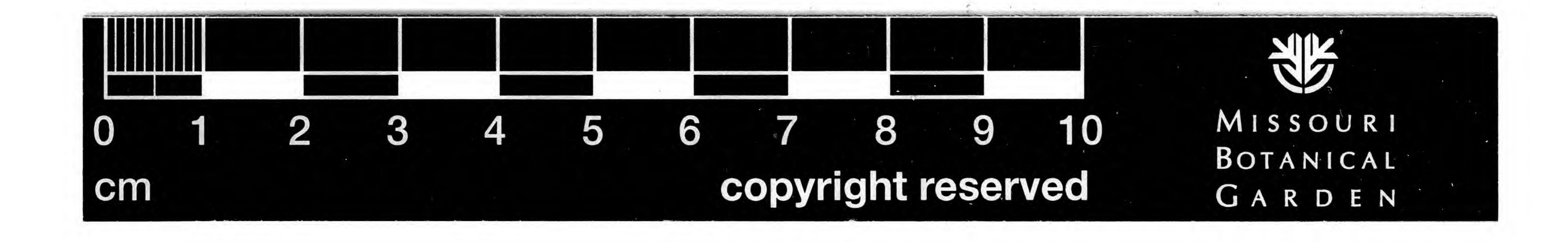


1836-1882		Values for Day.	or each	Extren	ne Maxima an on each Day		
	Min.	Max.	Mean.	Min.	Year.	Max.	Year.
Jun.10	62.65	81.90	72.27	46.5	1877	97.5	1836
	61.90	79.38	70.64	45.0	1842	94.0	1841
4.175	63.32		72.45	50.0	1858	94.5	1853
		83.82		50.0	1000	94.5	1000
				51.0	1856	96.0	
					1000		1879
		82.10		48.5	1000	95.3	1000
			74.45	. 49.0	1869	96.5	1868
		82.32		53.0	1841	98.5	6.6
	65.56		74.08	51.5	1876	98.5	
	65.78		74.87	49.5	66	99.0	66
	The state of the s	84.37		52.0	1866	96.0	1853, 1869
	65.46	83.41	74.43	51.0		97.7	
20	65.92	83.96	74.94	52.0	1862	98.0	1861
21	65.57	83.52	74.54	49.0	1863	97.0	1853
	65.64			50.0	1868	99.0	1871
	67.06	T 100 T		53.0	66	101.5	
		85.11	76.01	55.5	1853	97.5	1870
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		84.60		51.9	1000	98.6	, 1010
				56.0	1050		1070 1000
	A STATE OF THE RESIDENCE OF THE RESIDENC				1852	98.0	1870, 1882
		87.88		55.0	1865	98.5	1870
		87.21		59.0	1836	97.0	1854
		87.48	The state of the s	55.5	1866	100.0	1870
75.00		86.08	A THE R. P. LEWIS CO., LANSING, MICH. 40, 100, 100, 100, 100, 100, 100, 100,	51.0	66	101.5	66
			78.09	55.3		99.0	
30	69.23	86.95	78.09	56.0	1871	101.5	1870
uly 1	68.39	85.91	77.15	54.0	1851	98.0	1854
2	68.06	85.60	76.83	54.0	1861	98.5	1858
3	68.42	87.10	77.76	56.0	1857	99.5	1856
		87.89		53.0	1859	100.5	1868
			77.62	54.6		99.6	1000
		87.39		56.5	1882	98.5	1870
		88.05		54.0	1842	97.0	1868
					1044		
20	70.20	87.84		58.0		98.0	1874
		87.97		58.0	1870	97.0	1854, 1879
		89.15		57.0	The second secon	99.0	1858
			79.15	56.7		97.9	
			79.65	61.0		101.5	1881
. 11	70.35	86.99	78.67	58.0	1854, 1873	100.0	1841
12	70.64	87.50	79.07	58.0	1863	100.0	66
13	69.99	88.61	79.30	57.0	1861	100.5	1862
		88.66		56.5	1882	100.5	1868
			79.27	58.1		100.5	
15		89.38		58.0	1842	100.0	1856
		89.02		55.0		100.0	1870
					1000		
		90.07		56.0		102.5	1856
	A STATE OF THE PARTY OF THE PAR	88.73	The second secon	58.0	1846	101.5	1868
		87.70		58.0	1878	100.0	1854
4.000			79.96	57.0		100,8	
20	69.94	86.92	78.43	57.0	1873	100.5	1854, 1860
		86.42		57.0	1869	104.0	1860
	68.63			57.0	1864	101.5	1870
		87.16		55.0	1861	98.5	46
		87.86		56.0	66	101.0	66
41	OO.OI		77.93	56.4		101.1	



1836-1882	2.0	Values for Day.	or each	Extre	me Maxima ar on each Day		The state of the s	Suppose
1000 1002	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	Mea
Jul. 25	70.24	88 38	79.31	59.0	1876	100.0	1870	78.
	70.73			58.0	1853	99.5	10.0	78.
		87.58		56.0	1000	101.5	66	78
		87.80	A CONTRACTOR OF THE PARTY OF TH	56.0		100.0	1838	78.
		87.58			1853, 1865		1854	78.
The state of the s		87.92	The second second second	58.0		100.4	E DA COLORDA	78.
		85.57	1	55.0		101.0	1838	77.
		86.47	the second second second	55.0	1849	100.0	1854	77.
		87.33		52.0	1842	101.0	66	77.
200		86.95	And the second second	52.0	6.6	99.0	1861	77.
		86.59	The state of the s	55.0		101.0		77.
2.4			77.46	53.8		100.4		77.
4	68.40	85.51	76.95	54.0	1880	101.5	1861	77.
5	68.50	86.01	77.25	58.0	66	97.5	1858	77.
6	68.97	87.18	78.07	58.0	1842	98.5	1838	77.
7	69.11	87.07	78.09	57.5	1852	100.0	1861	77.
8	68.96	87.09	78.02	56.0	1869	99.0	1850	77.
		86.57		56.7		99.3		77.
		85.14		58.0	1879	104.0	1881	77.
	69.07	83.39	76.23	55.5	1882	98.0	166	77
2.2 (20)	69.37		77.90	57.0	1002	100.5	66	77.
				56.0	1868	105.0	66	77.
0.000		86.08		57.0				
		85.50			1860	101.5	1850	77.
2.0				56.7	1001	101.8	1055	77.
		85.30		56.5	1861	98.5	1857	77.
		85.39	76.95	59.5	1000	97.0	1841	76.
		86.22		57.0		96.0		76.
4.5 9.0		85.54	4-3363	54.0	1855	97.0	1843, 1860	76.
		86.27		56.0	1855, 1866	99.5	1850	76.
		85.74		56.6		97.6		76.
		85.25		56.0	1855	99.5	1850	76.
		85.72		52.0	1836	99.0	66	76.
21	67.87	85.71	76.79	59.0	1864	97.0	1869	76.
22	67.29	84.67	75.98	51.0	1837	97.5	1872	76.
23	66.31	84.09	75.20	52.0	1866	97.5	1869	76.
	67.31	85.09	76.20	54.0		98.1		76.
		85.29		49.0	1866	97.0	1872	75.
		84.42	The second secon	50.5	46	100.0		75.
	67.02		75.98	49.0	1863	98.5	66	75.
	65.88		74.99	54.0	1856	97.5	1838	75.
	65.37		74.17	51.0	1844	97.5	1881	74.
		A STATE OF THE STA	75.30	50.7	1011	98.1	1001	
		83.05		49.0	1863		1001	75.
		84.34		45.0	1005	100.5		74.
		82.96			66	100.5	1854	74.
				48.5		99.0	1854, 1873	74.
		83.69		50.0	1849	98.5	1854	74.
		82.80		51.5	1850	102.0	1864	74.
			74.15	48.8		99.9		74.
		83.00		51.0	1863	102.0	1864	74.
- 12.5	65.10	83.59	74.34	51.0	1868	100.0	1881	74.
	65.33		73.74	50.0	1859	100.0	66	73.
	64.98	81.84	73.41	51.5	1848	97.0	66	73.
7	65.61	83.17	74.39	52.0	1849	97.0	66	73.
	C5 11	20 75	73.93	51.1		99.2		73.

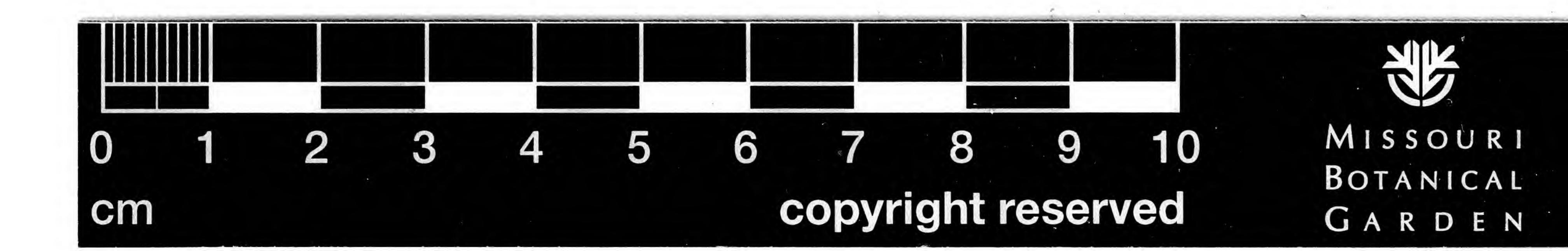
836-1882		Values in Day.	for each	Extre	me Maxima ar on each Day	nd Minin of the Y	na observed ear.
	Min.	Max.	Mean.	Min.	Year.	Max.	Year.
Sept. 8	64.48	83.47	73.97	49.5	1849	99.5	1854
1000	63.79		72.21	50.0	1847, 1869	93.5	1841
	62.59		71.27				
	61.01			46.5	1880	96.5	1842
	•	The second secon	69.95			94.0	
	The National Control of the Control	77.79			1839, 1878	The state of the s	1865
			71.33			95.1	
			69.06		1839, 1878	93.0	1851. 1864
14	60.37	79.16	69.76	43.5	1873	93.0	1846
10.24	60.51		69.19	47.5		88.0	1849, 1862
16	60.76		70.05	47.0	1842	91.5	
				40.5	1868	93.0	1843, 1857
			69.44	45.1	1000	91.7	1040, 1001
100	60.08				1009		1007
6-210290				42.0	1863	92.5	1867
	57.74		66.82	44.5		92.0	
	55.76		64.72	39.0	1875	93.5	1881
	55.50	73.29	64.39	39.5	1866	95.0	1872
	55.39		64.54	39.0	1875	92.0	1881
			65.93	40.8		93.0	
	58.17	A LOUIS AND A STATE OF THE PARTY OF THE PART	67.49	36.0	1856	92.0	1881
24	58.15	76.23	67.19	37.0	66	92.5	66
1 - 1 - 1	57.09	75.37	66.23	42.0	1879	91.5	1850
	54.61	73.81	64.21	40.0	1875	92.0	1847
		73.82					
	114 4 15		THE STREET STREET, STR	41.5	1871	88.0	1854
100			65.89	39.3	1000	91.2	400-
	The second secon		Walter Street Control of the Control	36.0	1839	90.5	1867
	54.17		63.02	35.5	1846	93.0	1858
30	52.59	71.53	62.06	35.0	1851	90.0	66
ct. 1	54.64	73.37	64.00	36.5	1856	87.0	1856
2	54.68	73.74	64.21	38.5	"	91.0	1867
	54.09	72.81	63.45	36.3		90.3	
		73.55		33.0	1840	89.0	1872
				31.0	1836	88.5	66
	52.18			34.0	1000	88.0	1879
			THE RESIDENCE AND THE PROPERTY OF THE PARTY				
1		70.03		34.0	1855	88.5	1852
		70.62		34.0	1873	87.0	1860
1			61.86	33.2		88.2	
	A CONTRACTOR OF THE PARTY OF TH		61.42	31.5	1868	85.0	1856
		70.66	The state of the s	36.5	1842, 1864	87.0	1879
		69.91		37.0	1849	86.0	66
11	49.98	67.14	58.56	31.5	1872	86.0	66
S 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	48.73		56.82	30.0	1875	87.0	66
	STATE OF THE STATE	THE COUNTY OF THE PARTY OF THE	59.69			86.2	
			55.97	29.5	1860	81.5	1879
		65.24		29.5	1872	84.0	1878
3.0							
		65.82		28.0	1845	84.5	1881
	A LINE WILLIAM SHOWING	65.64		27.0	1838	83.0	1842
		65.42		31.0	1836, 1868	83.0	1839, 1842
	46.84	65.61	56.23	29.0		83.2	
18	44.64	60.55	52.59	34.5	1875	82.5	1867
	2.72		52.16	30.0	1846	84.0	1837
100	42.75	62.31	52.53	24.0	1836	83.0	1843
	44.60	62.47	53.53	25.0	1000	84.0	1837
	44.15		52.81	30.0			1001
	74.10)	01.4/	04.01	0U.U	1869	85.0	



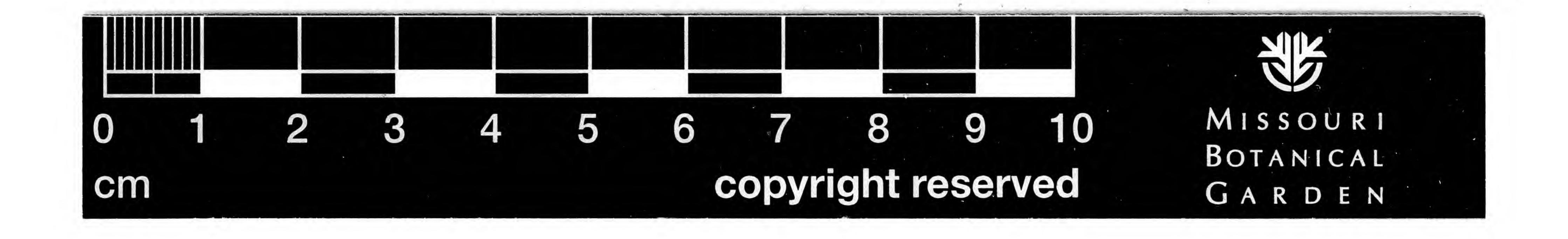
1836-1882		Values for Day.	or each	Extre	me Maxima an on each Day		
1002	Min.	Max.	Mean.	Min.	Year.	Max.	Year.
Oct. 23	43.41	61.54	52.47	20.0	1863	79.5	1839
24		60.64	52.48	20.0	1000	78.0	1875
25		59.96	51.23	22.0	1841	78.5	1882
				*			1874
	43.64			21.5	1862	81.5	
			51.63	26.0	1869	81.5	1870
		A Print of the Control of the Contro	51.98		10-0 10-0	79.8	10-1
			52.05	27.0	1873, 1878	80.5	1874
	43.71		The second second	22.0	1873	81.5	1875
				26.5		81.5	1876
	39.75	56.66		19.5	66	80.0	
	42.01		CARLES TO SELLAR TO A SECURITION OF THE SECURITI	22.0	1873	78.0	1842, 1876
	42.27	59.05	50.66	23.4		80.5	
2	43.20	58.00	50.60	30.5	1848	77.0	1847
3	41.11	56.59	48.85	25.5	1879	75.5	1859
4	42.01	58.66	50.33	23.0	66	80.0	1850
	41.23		48.46	25.0	1865	72.5	1874
	38.91			23.5	1877	73.0	1874, 1878
			49.07	25.5		75.6	
7		57.55		24.0	1856	77.0	1874
8	40.30	55.78	48.04	11.0	1838	75.5	1868
	37.43	51.88	44.66	16.0		75.0	1844
	39.03	52.71	45.87	20.0	4.6	76.0	66
	40.23	53.53		26.5	1869	81.5	1837
			46.92	19.5	1000	77.0	1001
	36.93		44.29	17.0	1859	71.5	1879
	36.66	52.82		21 21 21	1000		1019
	36.67			15.0		79.0	
				20.0	1872	71.5	1855
	35.18		42.59	18.0	1838	72.0	1873
	36.11		42.85	10.0		69.0	1865
F-2 (1994)			43.75	16.0	1000	72.6	10-0
	35.55			12.0	1838	69.0	1853
	33.62			6.0	1880	72.0	66
	31.60	45.03		7.5	6.6	71.0	6.6
	32.59		Palacine Control Contr	9.5	1872	72.5	1837
	33.09		39.46	10.5	1880	69.0	1841
	The state of the s	Committee of the Commit	39.58	9.1		70.7	
22	32.28	45.92	39.10	6.5	1880	71.0	1843
23	32.14	43.97	38.05	9.5	1871	69.0	1867
24	29.85	41.93	35.89	5.5	1860	65.5	1850
25	29.83	41.92	35.87	0.0	1839	64.5	1856
26	31.25	44.06	37.65	14.0	66	65.0	1850
4	31.07		37.31			67.0	
			37.33	5.0	1845	67.0	1870
		A STATE OF THE PARTY OF THE PAR	37.84	- 0.5	66	72.0	1864
		The second of th	35.90	2.0	1872	76.5	1001
75.00			35.76		1845	72.5	1837
	30.33			- 1.0	1040	72.5	1001
			36.95				
			TO THE WORLD BY SALES AND A STATE OF THE SALES		1070	72.1	1004
	31.06			4.0	1876	72.0	1864
3		43.00	36.80	8.0	1859	61.0	1842, 1873
	30.75	42.18		- 2.5	1871	59.0	1877
	29.45		35.39	2.5	66	61.0	1879
	29.56		35.72	3.5	1859	62.0	1861
		140 67	36.47	3.1	- 7	63.0	

1836-1882		Values f Day.	or each		하나요 아이트 아이들에 어려워 가는 것이 없는 것 같아.	nd Minima of the Year		pos
	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	Me
Dec. 7	28.00	40.23	34.11	-11.0	1882	63.0	1851	34
8	27.79	39.11	33.49	- 4.0	6.6	65.0	1861	33
9	25.07	35.35	30.21	- 5.0	1876	74.5	66	33
10	23.89	36.06		0.0	1868	68.0	66	32
. 11	28.19	37.61	32.90	-11.0	66	68.0	1873	32
	26.59	37.67	32.13	-6.2		67.7		33
Print 1625				- 0.5	1868	68.5	1877	31
		36.70		4.0	1865	62.5	1881	31
	23.46		28.62	- 1.0		59.0	1861	31
	23.57	33.46		2.5	1851	67.5	1877	31
			29.56	- 0.5	66	62.0	6.6	31
			29.90	-0.1		63.9	9	31
		36.91		2.5	1875	67.0	1877	31
		38.87		1.0	1876	69.0	66	30
			32.23		1863	67.5	6.6	30
12.34				- 2.0	1871	65.0		30
			30.90	- 2.0	1865	66.0	46	30
				-1.0		66.9		30
22			28.25		1872	62.0	1877	30
1000		35.34		- 7.0	1870	61.0	1875	30
				-19.5	1872	66.0	66	30
				-11.0		70.0	1867	31
			31.84		6.6	65.0	1875	31
				-11.3		64.8		30
	And the Part of the State of th			6.0	1872	65.0	1846	31
		37.80		- 6.0	1880	59.0	1862	31
			31.66	-18.0	66	64.0	1851	31
			29.99	- 8.0	66	66.0	1875	31
			A COMPANY OF THE RESIDENCE OF THE PARTY OF T	-10.5	1863	73.5	66	3
			M. A. A. A. C. S.	-9.7		65.5		31

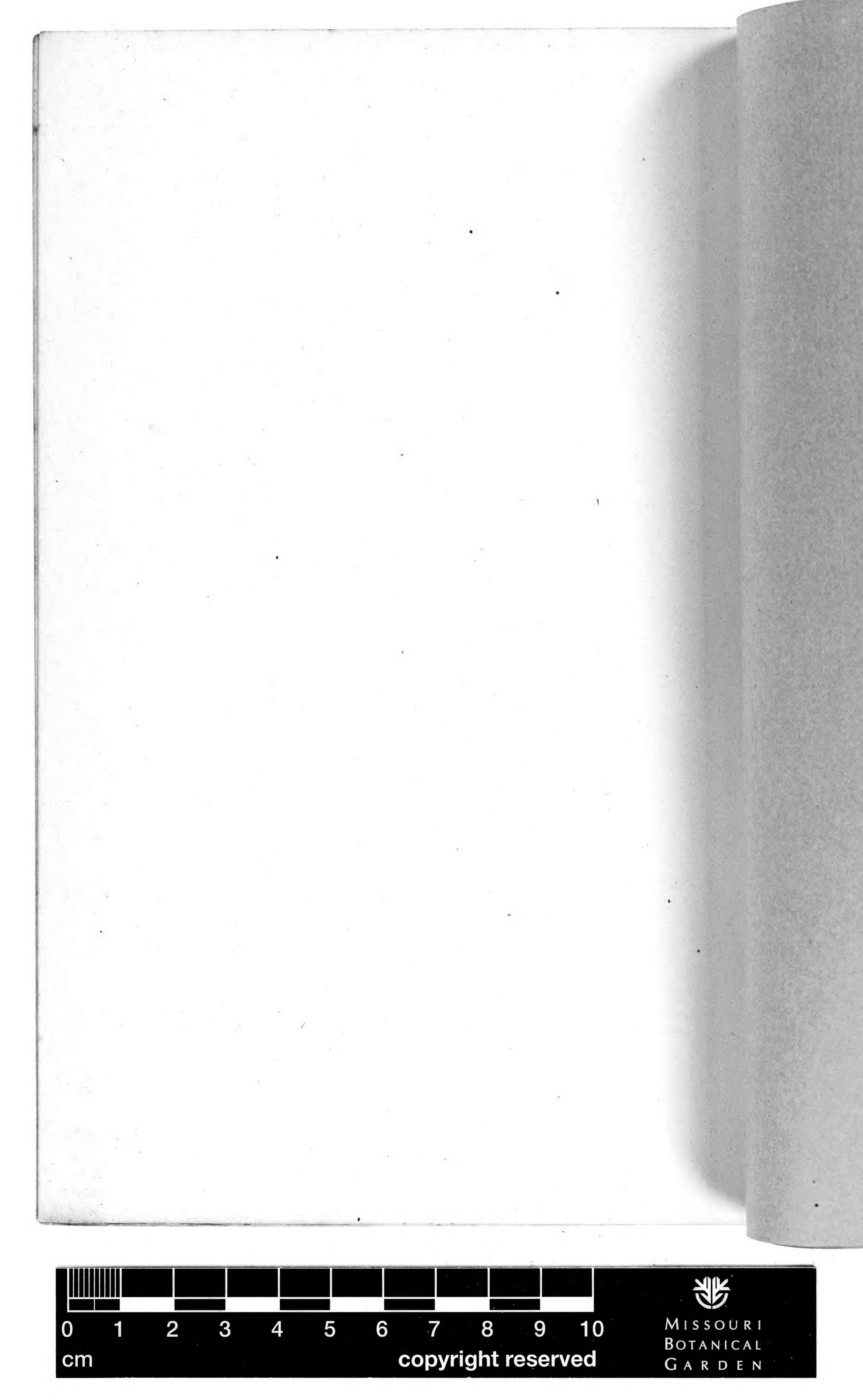
The annexed diagram, for the construction of which I am indebted to Dr. G. Hambach, represents the principal results of these tables. The perpendicular lines divide the year into 73 periods of 5 days each, while the horizontal ones mark the degrees. The central full-faced curve indicates the Mean Temperature of the penthemeral periods of the 47 years, as actually found, while the dotted line represents the supposed real Mean Temperature as suggested in the last column of these tables. The uppermost curve shows the Highest Temperatures and the lowest curve the Lowest Temperatures observed in those same penthemeral periods within the same number of years. It will be noticed that while the points of Mean Temperature occupy the centre of each period, the Maxima and Minima do not show in the middle of the spaces, but on that one of the 5 days of the period on which they actually did occur.

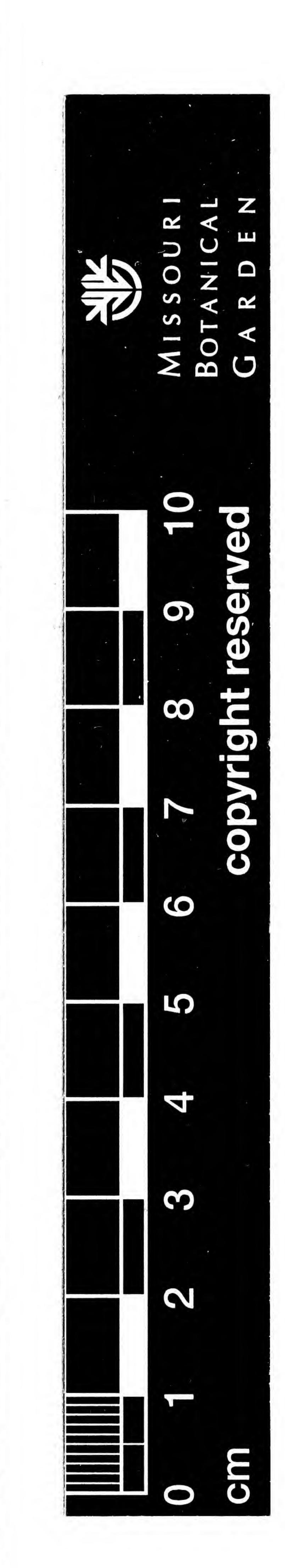


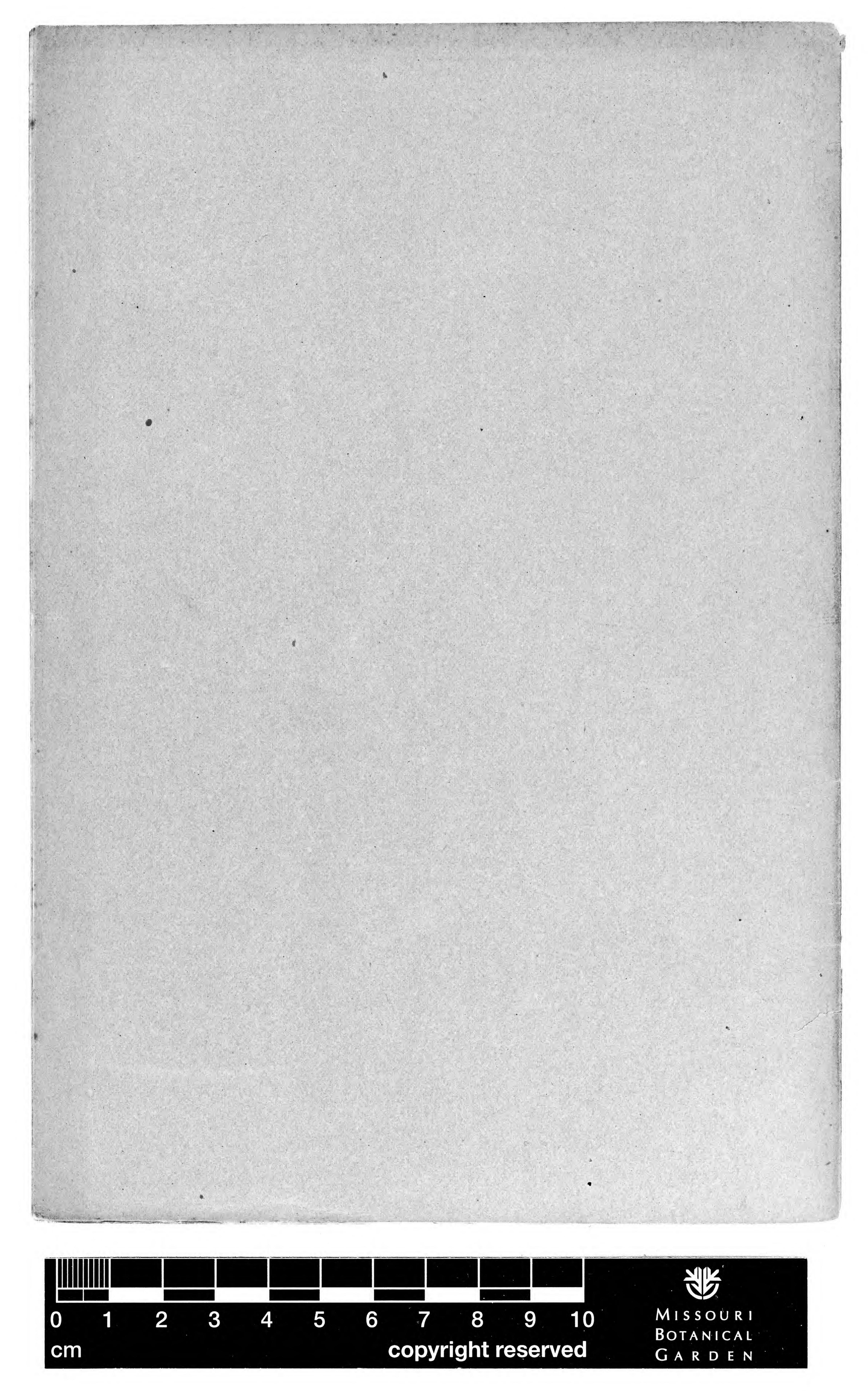
MISSOURI BOTANICAL GARDEN GEORGE ENGELMANN PAPERS











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MISSOURI BOTANICAL GARDEN.

The mean and extreme daily Temperatures in St. Louis for forty-seven years, as calculated from daily observations.

By Dr. GEORGE ENGELMANN.

THE EVOLUTION OF THE AMERICAN TROTTING-HORSE.

By FRANCIS E. NIPHER.

MAGNETIC SURVEY OF MISSOURI. 5th Annual Report.

By FRANCIS E. NIPHER.

On the Expression of Electrical Resistance in Terms of a Velocity.

By FRANCIS E. NIPHER.


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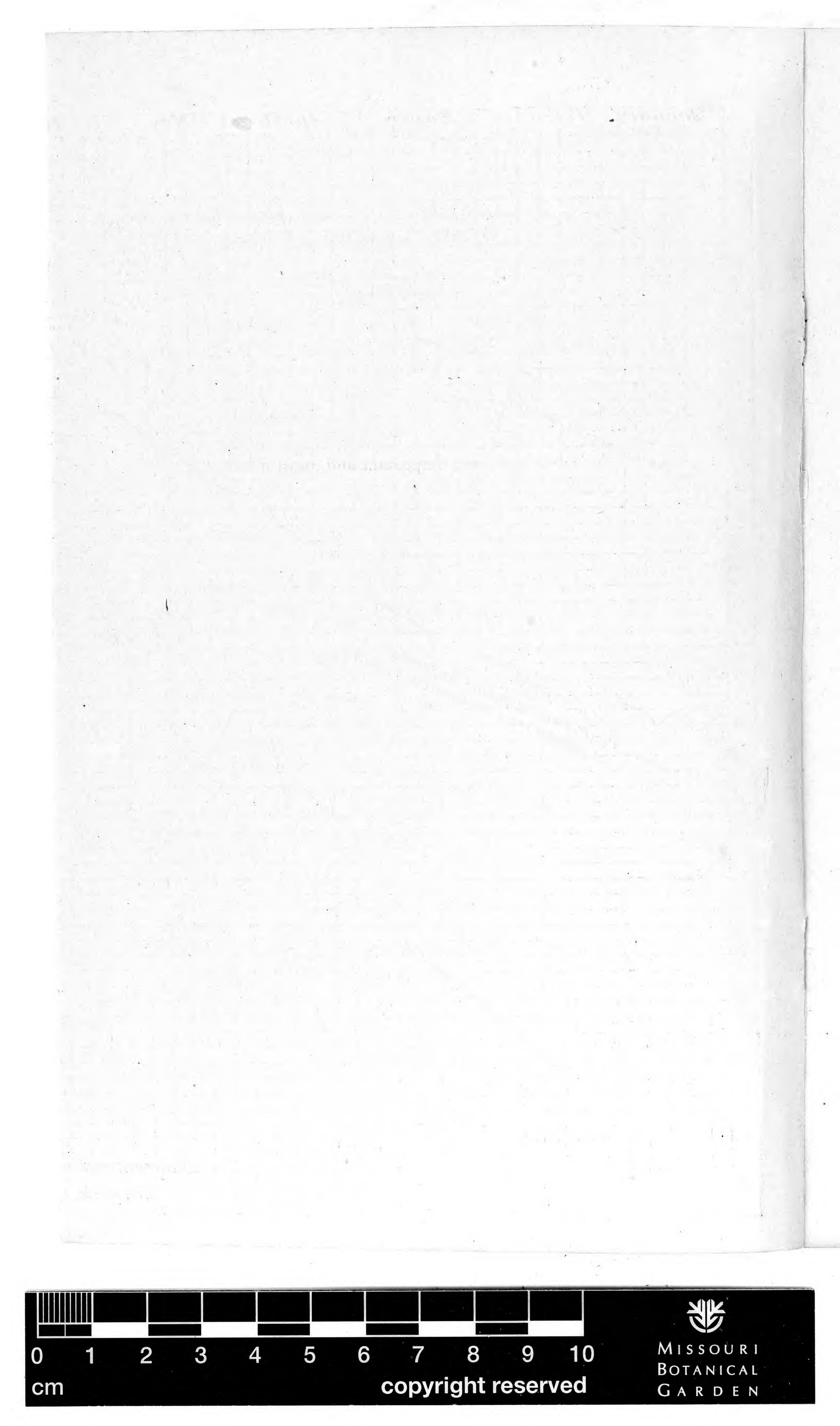
March, 1884.



MISSOURI MOTAINCELL CARDEN GEORGE ENGELMAIN PAPERS







The mean and extreme daily Temperatures in St. Louis during forty seven years, as calculated from daily observations,

By Dr. GEORGE ENGELMANN.

Half a century has passed since I began to study the meteorology and climatology of this neighborhood, and since the year 1836 I have made regular meteorological observations, first on temperature, the winds and the condition of the sky, and soon afterwards on atmospheric pressure, rainfall and humidity.

I give here the results of my thermometrical observations, which I consider as the most important and most interesting of the series. They comprise, to be sure, only forty-seven years, and I might have waited until at least half a century was completed; but the results would scarcely have been different, and the task then perhaps problematical of accomplishment.

The observations were made within the city of St. Louis, and can thus not claim precision for this whole region. St. Louis, to be sure, was, when they commenced, a small town of perhaps 15,000 inhabitants, while now, at their completion, it is a large city of probably 400,000, with the necessary accompaniment of brick and stone, and especially with the smoke of thousands of chimneys, furnaces and factories, and the almost total absence of verdure. It has been held by some, that these influences had little effect on temperature, but that brisk breezes would soon dispel smoke and equalize temperature. This, however, is not quite so, and direct thermometrical comparisons prove that the extreme temperatures, and, remarkably enough, even the extreme heat, are less marked in the city than in the country, and that the mean temperature is higher in the city than in the country (Trans., vol. ii., p. 70); but, aside from instrumental observation, the state of the vegetation proves it every spring and fall, when we find in our city gardens the plants uninjured on mornings when in the country they have suffered from late or early frosts.

St. Louis lies very nearly in the centre of the Mississippi Valley, 600 miles north of the Gulf of Mexico and just as far south of Lake Superior, about 500 miles west of the Alleghanies and 800 miles east of the Rocky Mountains; its Washington University, one



mile west of the river, lies in Lat. 38° 38′ 03″ and Long. 90° 12′ 15″; the low-water mark of the Mississippi is 379 feet above the Gulf, and the foot of Market street (City Directrix) is 413 feet above the same.

My observations were made in the first twelve years on the south-east corner of Second and Chestnut streets, only two blocks from the river and 75 feet above low-water mark of 1863; for the next 22 years on the south-west corner of Fifth and Elm streets, five blocks from the river and 110 feet above low-water mark; and for the last 13 years on the north-west corner of Thirtieth and Locust streets, two miles from the river and 177 feet above low-water mark. When I was absent from the city Dr. A. Wislizenus and lately Mr. B. D. Kribben have kindly filled the gaps.

My instruments were at first such as could then be obtained here; soon I imported correct thermometers from Europe, and for nearly 40 years I used those made by Jas. Green, then of Baltimore, and soon afterwards of New York.

For many years the observations were made at different periods of the day, and especially at hours when the extremes might be expected to occur, viz. at sunrise and at 3 p.m.; and the maximums and minimums were selected from all of them, often eight in a day, at whatever hour of the day they were found. Differential thermometers were observed only since the last 12 years. Thus I may not always have noted the absolute extremes of each day, and my tables can claim only approximate reliability; I give them for what they may be worth, but I can assure my readers that they furnish a record elaborated with zeal, conscientiousness, care and assiduity, and for a length of time such as probably few others, if any, exist in this valley.

The arrangement of the tables explains itself. The first two columns represent the means of the 47 minimum and of the 47 maximum observations made on each day of the year, and the third column the mean calculated from the two former. The next "Min." column gives the lowest and the "Max." column the highest temperature ever observed on that day; the column of years next to these gives the year in which these extremes did occur. The last column represents a supposed—or estimated—true mean for the day after eliminating excessive extremes.

The year has been divided into 73 periods of 5 days each, the



means of which are printed in full-face type, to distinguish them. It will be seen, however, that the means of these periods do not progress, rise and fall, much more evenly than the single daily means; compare, e.g., the mean of Jan. 31st to Feb. 4th, which is so much lower than the mean of the foregoing or the following five days that one might suspect a regular and normal decline of temperature in these days, and not a mere accident.

A few facts must strike every one who examines the tables. The first is, that a time even as long as 47 years fails to give us anything approaching absolute and reliable means; and we come to the painful conclusion, that observations even continued for double that time, or for a century, may not yet obtain that desirable object. It seems that the excessive extremes of one or of a few days such as we often observe in our climate of extremes, especially in the winter season, will influence—or, I may say, vitiate—the means of a long series of observations; and the question with me arises, whether such extremes ought not to be eliminated from the series, and thus truer means be obtained. At the same time we may justly be astonished that from such heterogeneous data so much order and system result—which gives us hope that we cannot be quite on the wrong track.

Another fact, which strikes us in looking over the tables, is that the mean temperatures do not increase and decrease evenly, but sometimes quite rapidly, and at other times they may become almost stationary for a time. These points come out most strikingly on a diagram which embodies the essential parts of the results and shows the daily progress of the temperature. Thus we find very little change from the middle of December to the first part of February, though the temperature proves to be lowest from January 4th to 13th; then we notice a rapid rise from Feb. 6th to 20th, a slower rise to the middle of March, then a rapid one to the end of the month; in the forepart of April a slow and after the middle of that month a very marked one; then follows a tolerably even, at last quite slow, rise to July 9th, when between this date and the 18th the greatest elevation of the curve is obtained. After that the mean temperature falls slowly to the middle of August, followed by a more rapid decline to the end of September; after a slight pause in the first week in October, a more rapid fall takes place for the following two weeks and a

slighter one in the two weeks succeeding them. After that the temperature sinks rapidly to about Dec. 10th, from which time till the beginning of February the changes are not very marked.

The mean temperature of April 17th to 19th and from October 12th to 17th correspond with the mean of the year.

The tables, and still more distinctly the diagram, show us also that the extreme highest and lowest temperatures diverge most in winter and least in summer, and that their values are much more variable in the former than in the latter season. The possibilities of range from the middle of December to the middle of March are 80 to 95 degrees, while in June and July they amount only to 40 or 45 degrees.

The same law is found when we compare the actually observed lowest minimum and highest maximum of every month; their divergence is greatest in January, and least, not much more than half, in July.

	Min,	Max.	Range.		Min.	Max.	Range.
January	-22.5	72.0	94.5	July	53.0	104.0	51.0
February				August		104.0	59.0
March			86.0	September	35.0	102.0	67.0
April	18.0	99.0	81.0	October	19.5	91 0	71.5
May	29.0	97 5	68.5	November	-0.5	81.5	82.0
June	The second second	101.5	58.5	December	-19.5	72.5	92.0

Nearly the reverse is the case—i.e. the range in winter is much smaller than that in summer—if we compare the difference of the average daily minima and maxima for each month:

```
January...
13.27 | April.....
18.29 | July .....
18.24 | October ...
18.00

February...
14.72 | May......
18.77 | August....
17.75 | November 14.06

March....
16.40 | June .....
18.14 | September 19.05 | December.
11.97
```

The range, it will be seen, is, on the whole, least in the cooler and greatest in the warmer months of the year; but this difference is not due to the lower or higher temperatures of those months, for it will be seen that in December the range is the smallest (smaller than in January) and in September greatest (greater than in July). This variation in the range of maxima and minima is undoubtedly owing to the condition of the sky in the different months. Gloomy weather prevails in the beginning of winter, and a clear sky with abundant evaporation, and thus a reduction of night temperature, in the autumn. The little table can give us an indication of the prevailing weather in the different months. Thus the difference, and its cause, the clearness of

the sky, rises from December gradually till May, falls a little in June and July and more in August, rises to its highest point in September, is yet high in October and then falls rapidly till December, to rise again in January.

The temperature of our continental locality shows a great difference from that of the western coast of Europe; as a convenient example we may refer to the temperature of London. Their winters are warmer from the latter part of November until the beginning of March, and their summers much cooler from this period to the latter third of November; and the mean is much higher here.

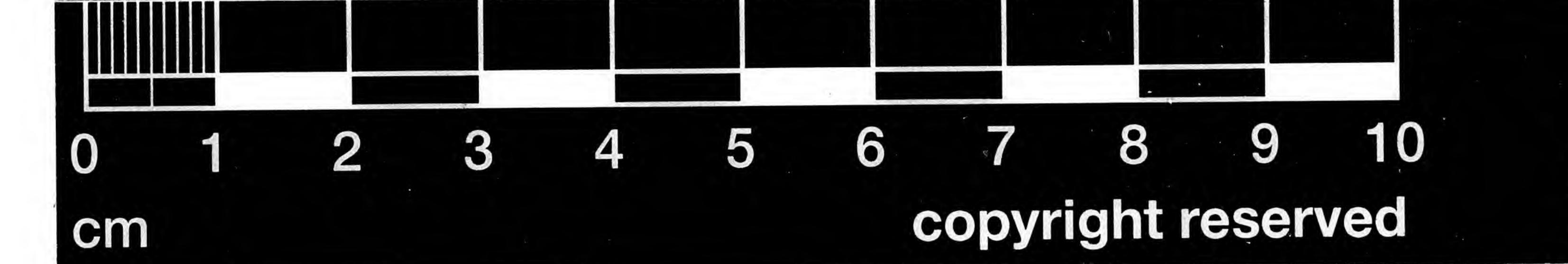
Jan. Feb. Mar. Apr. May. June. July. Aug. Sept. Oct. Nov. Dec. year. St. Louis. 31.8 35.4 43.7 56.2 66.3 74.7 79.2 76.8 69.0 56.1 42.8 33.4 55.4 London. 37.2 39.3 42.7 48.1 54.5 60.8 63.6 62.0 57.6 50.4 42.7 39.7 49.9 Difference. +5.4 +3.9 -1.0 -8.1 -11.8 -13.9 -15.6 -14.8 -11.4 -5.7 -0.1 +6.3 -5.5

MEAN AND EXTREME TEMPERATURES IN ST. LOUIS FROM 1836 to 1882.

1836-1882		Values for Day.	or each		e Maxima a on each Day	. The Company - 그런 아이들은 그런 그는 그런	na observed ear.	Sup- posed true
	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	Mean.
Jan. 1	23.55	36.77	30.16	-22.5	1864	68.0	1876	31.5
2	25.35	37.97	31.66	-13.0	1879	65.5	1855	31.3
3	25.54	38.55	32.04	-15.5	66	66.5	1874, 1880	31.0
4	23.95	35.82	29.88	- 6.0	"	63.5	1880	30.5
5	23.45	39.22	31.33	- 8.5	1864	62.0	1876	30.2
	24.36	37.66	31.01	-13.1		65.1		30.9
6	23.76	37.63	30.69	- 9.0	1879	64.0	1880	30.0
7	22.33	33.95	28.14	- 1.0	1881	64.0	1839	29.4
8	22.75	34.61	28.68	- 6.0	1877	68.0	1876	29.0
9	22.65	35.48	29.06	-18.0	1875	65.5	66	29.0
10	22.67	34.82	28.74	-11.0	1881	70.0	1839	29.5
	22.83	35.29	29.06	- 9.0		66.3		29.4
11	25.42	39.20	32.31	- 1.0	1881	71.0	1839	30.0
12	26.69	39.27	32.98	2.0	1852	65.0	1863	30.2
13	24.61	36.81	30.71	0.0	66	59.0	66	30.6
14	25.61	38.11	31.86	-12.5	1881	64.0	1848	31.0
15	26.71	39.67	33.19	- 2.5	1875	66.0	1847	31.4
	25.80	38.61	32.21	-60		65.0		30.6
16	24.03	36.27	30.15	2.0	1841	63.0	1845	31.8
17	21.09	34.27	27.68	-11.0	46	64.0	1842	32.0
18	21.65	34.32	27.98	-12.5	1857	66.0	66	32.0
19	23.63	38.09	30.86	-12.0	1852	61.0	1843	32.0
20	27.83	39.54	33.68	- 1.5	1866	64.0	66	32.0
	23.64	36.49	30.07	- 7.0		63.6		31.9
21	25.97	38.79	32.38	- 3.0	1854	67.0	1843	32.0
22	23.84	39.19	31.52	- 2.5	1857	62.0	1858	32.0
23	24.63	38.36	31.49	0.0	1854	62.0	1864	32.0
24	25.57	39.64	32.60	2.0	1873	65.0	1860	32.2
25	27.26	41.63	34.44	- 5.5	1840	65.0	1864	32.4
	25.45	39.52	32.48	-1.8	3	64.2		32.1

1836-1882	Mean Value for each Day.			Extreme Maxima and Minima observed on each Day of the Year.				
1000-1002	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	Mea
Jan. 26	26.76	40.36	33.56	1.0	1865	71.5	1843	32.
27			33.24	-0.5	1873	72.0	1864	32.
- T- AV			The last that the last	-6.5	10.0	67.0	1001	
7.000	24.85	39.15			66			32.
	25.32	39 30	The Control of the Co	-23.0		64.5	1852	32.
10 - 12 - 1 A - 1	24.79	41.09	32.94	- 2.0		64.5	1842	32.
			32.81	The second secon		67.8		32.
			31.58		1875	65.5	1877	32.
		37.20	A Second Control of the Control of t	-8.5		70.0	1854	32.
2	23.55		29.66	-3.5		56.0	1846	32.
	21.71	35.72	28.72	-15.0	1856	62.5	1852	32.
			29.26	-11.0	66	61.0	1837	33.
	23.11	36.68	29.89	-7.2		63.0		32.
		Product of the second of the s	31.98			61.0	1837	33.
			33.52			67.0	1855	33.
		41.19		_ 3.5		65.0	1851	33.
			32.36			66.0	1847	33.
		40.05		-5.0		72.0	1876	1 1 1 1 1 1 1 1 1
			32.47				1010	33.
			33.74			66.2	1070	33.
	25.92				1841	73.0	1876	33.
	29.98	43.93	36.95	2.0		73.0	1845	33.
25 (3.51)	29.00	43.44	36.22	2.0	4000	70.5	1882	33.
	29.06	40.41	34.73		1838	69.0	1867	34.
	24.71			- 3.5		64.0	1857	34.
4.70.00			34.73			69.9		33.
15	26.53	Committee of the commit	33.81		1866	68.0	1848	34.
16	26.07	42.59	34.33	-5.0	66	63.5	1857	34.
17	28.03	41.18	34.60	- 4.0	1838	74.5	66	34.
18	28.05	42.39	35.22	_ 2.5	1849	65.5	1873	34.
19	30.26	44.57	37.41	5.0	1838	76.0	1859	35.
				- 3.2		69.5	1000	34.
Process of		45.80		-3.5	1870	68.5	1850	35.
		45.27		-4.5		68.0	1836	Lace Lace
7.45.4	31.82		39.39					36.
455.75.43		44.71		0.0	1000	68.5	1861	36.
and the second			37.64	100		69.5	1851	37.
					1873	69.0	1880	37.
				- 0.1		68.7		36.
4.00			38.53		1855	67.0	1876	38.
		48.91		2.0		68.5	1880	38.
		45.46	The second secon	5.0	1836	73.5	1876	38.
and the same of th		The state of the s	38.74		1836, 1869	74.0	1861	39.
		49.02		10.0	1843	79.5	66	39.
			39.25	6.9		72.5		38.
	31.36		38.66	8.0	1843	76.0	1861	39.
3	29.29	43.89	36.59	0.0	1848	78.0	1842	40.
4	29.50	44.54	37.02	6.0	1875	75.5	1882	40.
5	30.62			8.0	1848	71.0	1855	
1 323	34.94			4.5	1869	76.5		40.
			38.67				1860	41.
		51.60		10.5		75.4	1000 1000	40.
The second secon	34.49	50.31	42.40		1857	77.0	1853, 1879	41.
12.5	35.01			13.5	1875	77.0	1879	41.
		48.18	41.59	6.0	1877	78.5	1842	41.
	33.22			10.0		79.5	1279	41.
		49.67	A CONTRACTOR OF THE REAL PROPERTY OF THE REAL PROPE	7.0	1836	69.0	1848	42.
	34.43	49.85	42.14	7.4		76.0		4

836-1882	Mean Value for each Day.			Extreme Maxima and Minima observed for each Day of the Year.				
200 1002	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	
19 19	34.82	50.86	42.84	11.5	1836, 1857	71.0	1839, 1861	
	34.24	50.64	42.44	5.0	1867	75.0	1850	
				1.0	100.	76.5	1875	
	34.51	50.55	42.53	7.5	1070		1854	
	33.87	48.89	41.38		1870	80.5		
	34.14	50.03	42.08	9.0	1843	77.5	1868	
	교회의 보기에게 어떤 것으라게		42.25	6.8		76.1	1010	
17	33.49	52.07	42.78	10.5	1879	79.0	1842	
18	34.86	52.32	43.59	15.0	66	84.0	6.6	
19	36.09	54.82	45.45	18.5	1875	84.0	66	
20	36.91	52.52	44.71	14.0	1855	84.0	66	
21	34.21	50.68	42.44	7.0	1876	76.0	1878	
			43.79	13.0		81.4		
	35.56		44.80	13.0	1843	76.0	1857	
	37.09	55.48	46.28	7.5	66	82.5	1868	
	36.90	54.30	45.60	12.0		83.0	1842	
-				13.0		82.5	1852	
	37.21	53.76	45.48	13.5			1838	
	37.69	54.92	46.30		1873	78.5	1000	
		The Section of the Delivery of the	45.69	11.8	1050	80.5	1000	
	39.16			23.5	1850	85.0	1838	
28	39.77	57.31	48.54	18.0	1855	83.5	1879	
29	40.42	58.31	49.36	23.5	1876	86.0	1842	
30	41.07	57.91	49.49	28.0	66	84.0	1838	
		57.34	48.84	25.5	1856	84.0	66	
	the contract of the contract o		48.84	23.7		84.5		
Apr. 1	00 -0	57.25	And the second s	24.0	1881	81.5	1882	
1 pr. 1		61.12		24.0	66	85.0	66	
3		62.44	53.55	24.5	1879	86.0	66	
		59.67	51.83	23.0	10.0	85.0	66	
4				22.5	1857	88.5	1871	
5	A COLUMN TO A COLU	60.82			1001		1011	
	1		51.33	23.6	1055	85.2	1071	
6		62.89	53.25	18.0	1857	89.0	1871	
7	44.77	63.98	54.37	29.0	1880	85.5	1860	
8	45.59	60.96	53.28	24.0	1845	82.5	1836	
9	43.84	61.86	52.85	27.0	1857	84.0	1844	
10	45.07	61.94	53.50	28.5	1836, 1874	87.0	66	
	44.57	62.33	53.45	25.3		85.6		
11	43.81	62.53		27.0	1857	83.0	1842	
12				26.0	66	84 0	1856	
-	45.33		54.46	32.0	66	88.0	1845	
	1 - 00	63.26	54.14	28.5	4.6	84.0	65	
14				23.0	1850	82.0	1856	
15	44.52	62.02	53.27		1000	84.2	1000	
			53.79	I control to the cont	1075		1015	
16	45.62	A Second State		26.5		91.0	1845	
17		64.55		20.5	6.6	93.0	1855	
18	45.78	64.34	55.06	26.0	6.6	99.0	6.6	
•	47.20		56.83	29.0	1857	83.0	1847	
	48.47			34.0	6.6	85.0	1836	
20		[1] 기계 [10] [10] [10] [10] [10] [10] [10] [10]	55.77			90.2		
01			59.38	36.0			1867	
			The state of the s			87.5		
			60.53			87.0	네 이 내가 되었다고 있어요? 이 사람이 모양하다 하다.	
	1		59.89					
			59.58	34.0		88.5	1854 1843, 1855	
	()()	711 ()61	1.1	- フソ h	K/I K/A	11411	INIX INO	



1836 1882 Ap. 26		Values for Day.	or each	Extreme Maxima and Minima observed on each Day of the Year.				
1000 1002	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	Mea
An 26	51 20	70.53	60.86	33.5	1873	88.0	1872	60.
	50.63	69.98	60.30	37.0	1857	93.0	1838	60.
	51.21	68.71	59.96	34.0	1854	83.5	1845	60.
		69.15		33.0	1874	89.5	1010	60.
				32.0		92.5	1855	60.
		69.07			1011		1000	60.
			60.20	33.9	1077	89.3	1000	
		69.72	A CONTRACTOR OF THE PARTY OF TH	35.5		91.5	1836	60.
		68.34		29.0	1851	87.0		60.
		69.67		38.0		88.5	1849	60.
	53.60		62.32	37.0		89.0	1860	61.
		71.88		37.0		91.5		6i.
	51.99	70.13	61.06	35.3	St. Add Add 150 at 150	89.5		60.
6	52.85	71.47	62.16	37.5	1863	88.0	1872	61.
7	53.77	73 49	63.63	35.0	1867	88.0	4.6	62.
8	54.05	72.56	63.30	38.0	1855	88.0	66	62.
9	54.40	73.21	63.80	39.0	66	88.0	66	63.
6.4	53.37			40.0	1838, 1871	89.5	1844, 1863	63.
			63.23	37.9		88.3		62.
	54.12		63.45	39.0	1864	91.5	1844	64
	55.17			39.5		91.5	1836	64.
	56.34		65.75	41.5		90.0	1862	65.
7.0	56.72			42.0	10.0	97.5	1836	65.
			65.57	40.5			1000	
						93.0		66.
22022			65.05	40.5		92.7	1071	65.
	56.73			40.0	1837, 1875		1851	66.
		73.47		42.0		91.0	1853	67.
		75.27		42.0		87.0	1836, 1870	I VOC 3
		77.30		43.0		89.5		68.
		77.34	The state of the s	42.0		90.5	1836	68.
			66.17	41.8		90.0	•	67.
		76.31	1	43.0	1857	96.0	1870	68.
		78.02		40.0	1838	97.0	66	68.
		77.68		44.0	1867, 1876	90.0	1839, 1856	68.
24	59.66	78.80	69.23	45.0		92.5	1873, 1879	69.
25	60.21	77.40	68.80	44.0	1845	93.0		69.
			68.46	43.2	The state of the s	93.7	2000	68.
The second secon		81.00	THE RESIDENCE OF THE PARTY OF T	48.0		93.0	1860	70.
1.50		79.37	The Art of the Section of the Sectio	48.0		94.0	1874	70
4		80.59	The state of the s	45.0	13-27-37-1	91.0	1848, 1851	70.
		79.24		44.0		91.0	1852, 1879	70.
		79.94		44.0	1845		1841, 1854	1 2 2 2 3
			70.41	45.8		91.8	1041, 1004	70.
A CONTRACTOR	62.14			52.0	1856		1071	70.
June 1				49.0	1843	97.0	1871	71.
		80.70				91.0	1845, 1852	71.
		80.12		49.0	1838	94.0	1852	71
		No. of the Control of		47.5		93.0	1856	71
		79.06		44.0	1859	94.0	1841	71.
			70.94	49.3		93.8		71.
		79.45		43.0	1839	93.0	1871	71.
	62.57	81.88		43.0	1838	93.0	1836, 1874	72
	62.18		71.73	50.0	1854	95.0	1874	72
		81.95		49.0	66	96.0	1836	72
	63.62			51.5	1852, 1877	99.5	66	72
	69 71	21 16	71.93	47.3		95.3		72.

36-1882		Values for Day.	or each	Extreme Maxima and Minima observed on each Day of the Year.				
	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	
m.10	62.65	81.90	72.27	46.5	1877	97.5	1836	
	61.90	79.38	70.64	45.0	1842	94.0	1841	
	63.32		72.45	50.0	1858	94.5	1853	
		83.82	A STATE OF THE PARTY OF THE PAR	50.0	1000	94.5	1600	
	65.01	83.84	74.42		1856			
A Print and				51.0	1000	96.0	1879	
4 4 4 4 4			72.82	48.5	1000	95.3	1000	
		83.79		49.0	1869	96.5	1868	
	65.26	82.32		53.0	1841	98.5	6.6	
	65.56	82.60	74.08	51.5	1876	98.5	66	
	65.78	83.97	74.87	49.5	66	99.0	66	
	65.59	84.37	74.98	, 52.0	1866	96.0	1853, 1869	
pr 10, 10, 11, 11			74.43	51.0		97.7		
	65.92	83.96	74.94	52.0	1862	98.0	1861	
	65.57	83.52	74.54	49.0	1863	97.0	1853	
22	65.64	85.82	75.73	50.0	1868	99.0	1871	
23	67.06	84.58	75.82	53.0	66	101.5		
24	66.91	85.11	76.01	55.5	1853	97.5	1870	
		84.60		51.9		98.6		
		86.54	The state of the s	56.0	1852	98.0	1870, 1882	
				55.0	1865	98.5	1870	
				59.0	1836	97.0	1854	
		87.48		55.5	1866	100.0	1870	
		86.08		51.0	1000	100.0	1010	
	That is a second of the second		78.09			[[경기 [경기 [경기]]]		
				55.3	1071	99.0	1070	
	69.23			56.0	1871	101.5	1870	
•		85.91	The Secretary Control of the Secretary Control	54.0	1851	98.0	1854	
2		85.60	76.83	54.0	1861	98.5	1858	
100	68.42	87.10	77.76	56.0	1857	99.5	1856	
_	68.71			53.0	1859	100.5	1868	
			77.62	54.6		99.6		
				56.5	1882	98.5	1870	
6	70.11	88.05	79.08	54.0	1842	97.0	1868	
7	70.20	87.84	79.02	58.0	66	98.0	1874	
		87.97	79.26	58.0	1870	97.0	1854, 1879	
1.00		89.15		57.0	1842	99.0	1858	
	70.23	88.08	79.15	56.7		97.9		
	[] [[] [] [] [] [] [] [] [] [87.84		61.0		101.5	1881	
		86.99		58.0	1854. 1873		1841	
to the second second second		87.50		58.0		100.0	66	
				57.0		100.5	1862	
	70.69	88.66		56.5		100.5	1868	
		87.92		58.1	1002	100.5	1.000	
15		89.38	The Court of the C	58.0	1842	100.0	1856	
5 4 7 4 7 7		89.02		55.0	1863	100.0	1870	
		90.07			1005			
5.74.3 (4)				56.0		102.5	1856	
		88.73		58.0	1846	101.5	1868	
		87.70		58.0	1878	100.0	1854	
			79.96	57.0		100,8		
		86.92		57.0		100.5	1854, 1860	
21	69.08	86.42	77.13	57.0	1869	104.0	1860	
22	68.63	85.63	77.94	57.0	1864	101.5	1870	
1		87.16	[- [경영 : 10] - [55.0	1861	98.5	66	
		87.86		56.0		101.0	66	
			77.93	56.4		101.1		

1836-188		Mean Values for each Day.		Extre	Extreme Maxima and Minima observed on each Day of the Year.				
	Min.	Max.	Mean.	Min.	Year.	Max.	Year.		
Tul 9	70.24	88.38	79.31	59.0	1876	100.0	1870		
26			79.50				1010		
4.5				58.0	1853	99.5	66		
		87.58	78.98	56.0		101.5			
			79.01			100.0	1838		
Z		87.58	The second process of the second of the seco	61.0					
			79.17			100.4			
		85.57	The state of the s	55.0	1847	101.0	1838		
3]	67.96	86.47	77.21	55.0	1849	100.0	1854		
Aug. 1	68.38	87.33	77.85	52.0	1842	101.0	66		
2	68.25	86.95	77.60	52.0	6.6	99.0	1861		
9	68.61	86.59	77.60	55.0	66	101.0	66		
			77.46	53.8		100.4			
4		85.51		54.0	1880	101.5	1861		
	68.50		77.25	58.0	1000	97.5			
	68.97			58.0			1858		
	69.11		78.09		1842	98.5	1838		
				57.5	1852	100.0	1861		
2	68.96		78.02	56.0	1869	99.0	1850		
		86.57		56.7		99.3			
	68.94	85.14	77.04	58.0	1879	104.0	1881		
	69.07	83.39	76.23	55.5	1882	98.0	66		
	69.37		77.90	57.0		100.5	4.6		
12	68.38	86.47	77.42	56.0	1868	105.0	44		
13	68.72	86.08	77.40	57.0		101.5	1850		
	68.89	85.50	77.19	56.7		101.8	1000		
14	68.49	The state of the s	76.89	56.5	1861	98.5	1857		
				59.5	1661	97.0	1841		
	The second secon	86.22	The second secon	57.0	1866	N. S. C. A. S. F. F. S.			
		85.54		54.0		96.0			
		86.27			1855	97.0	1843, 1860		
10		85.74			1855, 1866				
10				56.6		97.6			
		85.25		56.0	1855	99.5	1850		
		85.72		52.0	1836	99.0	66		
	67.87		76.79	59.0	1864	97.0	1869		
				51.0	1837	97.5	1872		
	66.31		75.20	52.0	1866	97.5	1869		
		85.09		54.0		98.1			
		85.29		49.0	1866	97.0	1872		
				50.5	1000	100.0	10.4		
	67.02		75.98	49.0	1863	98.5	66		
	65.88		74.99	54.0	1856	100000000000000000000000000000000000000			
	65.37	82.98	74.17	51.0		97.5	1838 .		
		84 25	75.30		1844	97.5	1881		
90	64 80		73.92	50.7	1000	98.1			
	64.55	The state of the s		49.0	1863	99.5	1881		
			74.44	45.0	66	100.5	1854		
	65.45		74.20	48.5	6.6	99.0	1854, 1873		
-	64.75		74.22	50.0	1849	98.5	1854		
	65.08		73.94	51.5	1850	102.0	1864		
	64.93	83.37	74.15	48.8		99.9	1001		
3	64.54	83.00	73.77	51.0	1863	102.0	1864		
4	The state of the s	83.59	74.34	51.0	1868	100.0			
5	65.33	82.15	73.74	50.0	1859		1881		
	64.98	81.84	73.41	51.5		100.0	6.6		
	65.61	83.17	74.39	52.0	1848	97.0	66		
			73.93	51.1	1849	97.0	66		
	1300					99.2			

836-1882		Values : Day.	for each	Extreme Maxima and Minima observed on each Day of the Year.				
	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	
Sept. 8	64.48	83.47	73.97	49.5	1849	99.5	1854	
9		80.63	72.21	50.0	1847, 1869	93.5	1841	
	62.59		71.27	46.5				
		78.90	the state of the s		1880	96.5	1842	
				47.5		94.0		
			69.24		1839, 1878	A Description of the Control of the	1865	
			71.33		TO THE STREET AND THE PARTY OF	95.1	The second secon	
13	60.27	77.85	69.06	47.0	1839, 1878	93.0	1851, 1864	
	the second secon	The state of the s	69.76	43.5	1873	93.0	1846	
15	60.51	77.88	69.19	47.5	1880	88.0	1849, 1862	
16	60.76	79.34	70.05	47.0	1842	91.5		
17	60.54	77.72	69.13	40.5	1868	93.0		
*		the state of the s	69.44	45.1		91.7	1010, 100.	
18	60.08		69.18	42.0	1863	92.5	1867	
	57.74		66.82	44.5	1000	92.0	1001	
	55.76		64.72					
	55.50			39.0	1875	93.5	1881	
100000000000000000000000000000000000000		73.29	64.39	39.5	1866	95.0	1872	
	55.39		64.54	39.0	1875	92.0	1881	
			65.93	40.8		93.0		
162.000	58.17	The state of the s		36.0	1856	92.0	1881	
	58.15	76.23	67.19	37.0	66	92.5	66	
25	57.09	75.37	66.23	42.0	1879	91.5	1850	
26	54.61	73.81	64.21	40.0	1875	92.0	1847	
27	54.87	73.82	64.34	41.5	1871	88.0	1854	
	56.58		65.89	39.3		91.2	1001	
Annual Printers		73.53		36.0	1839	90.5	1867	
2.50(6.7)	54.17	71.87	63.02	35.5	1846	93.0	1858	
		71.53		35.0	1851		1000	
ct. 1	54.64					90.0		
				36.5	1856	87.0	1856	
		73.74		38.5		91.0	1867	
1 1 2 2 1 1		AT THE RESIDENCE OF SHARES AND ADMINISTRATION	63.45	36.3		90.3		
		73.55		33.0	1840	89.0	1872	
		70.59		31.0	1836	88.5	66	
. 5	52.18	70.36	61.27	34.0	46	88.0	1879	
6	52.52	70.03	61.27	34.0	1855	88.5	1852	
7	51.93	70.62	61.27	34.0	1873	87.0	1860	
			61.86	33.2	FB-107-911-2-11-22-1	88.2		
343.11			61.42	31.5	1868	85.0	1856	
			61.07	36.5	1842, 1864	87.0	1879	
+ 4 1 2 1		69.91		37.0	1849	86.0	1010	
			58.56	31.5			66	
the state of the s	48.73					86.0	66	
		the state of the s	56.82	30.0	1875	87.0		
- C C - C - C - C - C - C - C - C - C			59.69	33.1	4000	86.2	40-0	
106.332		65.96		29.5	1860	81.5	1879	
25,0407		65.24		29.5	1872	84.0	1878	
15	46.88	65.82	56.35	28.0	1845	84.5	1881	
16	47.34	65.64	56.49	27.0	1838	83.0	1842	
		65.42		31.0	1836, 1868	83.0	1839, 1842	
	Land to the second of the seco		56.23	29.0	1000	83.2		
		60.55		34.5	1875	82.5	1867	
		61.62	52.16				The state of the s	
	The second secon			30.0	1846	84.0	1837	
		62.31	52.53	24.0	1836	83.0	1843	
100000000000000000000000000000000000000	44.60		53.53	25.0	1000	84.0	1837	
00		4.1 / 7	52.81	30.0	1869	85.0	66	

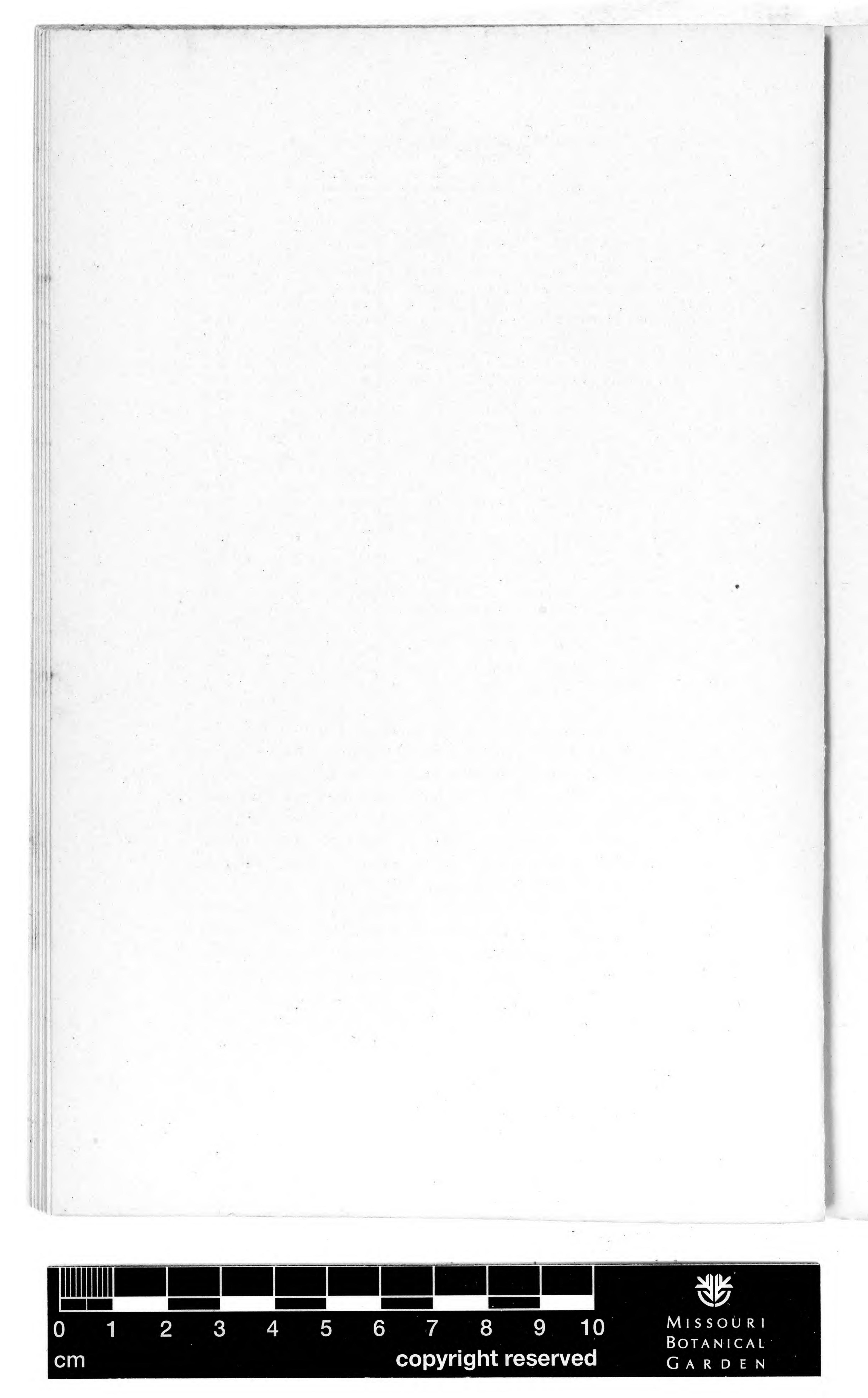
1836-1882		Values for Day.	or each	Extre	Extreme Maxima and Minima observed on each Day of the Year.					
a 000-1002	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	Mean		
Oct. 23	43 41	61.54	52.47	20.0	1863	79.5	1839	52.0		
24	44.32	60.64	52.48	20.0	66	78.0	1875	51.8		
	42.51	59.96	51.23	22.0	1841	78.5	1882	51.6		
E 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		60.56		21.5	1862	81.5	1874	51.4		
400000000000000000000000000000000000000				26.0	1869	81.5	1870	51.0		
		61.11			1009	The state of the s	1010	51.5		
			51.98		1070 1070	79.8	1071			
133 (22)		60.56		27.0	1873, 1878	80.5	1874	51.0		
		60.77		22.0	1873	81.5	1875	50.		
E. 2	42.34		49.81	26.5		81.5	1876	50.8		
A series	39.75		48.20	19.5	40-0	80.0	1010 10-0	50.0		
Nov. 1				22.0	1873	78.0	1842, 1876	50.0		
			50.66			80.5		50.4		
	43.20		50.60	30.5	1848	77.0	1847	50.0		
3	41.11	56.59	48.85	25.5	1879	75.5	1859	49.8		
4	42.01	58.66	50.33	23.0	66	80.0	1850	49.4		
5	41.23	55.70	48.46	25.0	1865	72.5	1874	49.0		
6	38.91	55.29	47.10	23.5	1877	73.0	1874, 1878	48.8		
	41.29	56.85	49.07	25.5		75.6		49.3		
7	40.78	57.55	49.16	24.0	1856	77.0	1874	48.0		
8	40.30	55.78	48.04	11.0	1838	75.5	1868	47.0		
9	37.43	51.88	44.66	16.0	"	75.0	1844	46.0		
10	39.03	52.71	45.87	20.0	66	76.0	66	45.8		
11	40.23	53.53	46.88	26.5	1869	81.5	1837	45.0		
79 T F 79 C			46.92			77.0		46.3		
4-1-1-1	36.93		44.29	17.0	1859	71.5	1879	44.5		
	36.66	52.82		15.0	66	79.0	66	44.0		
The state of the state of	36.67		44.26	20.0	1872	71.5	1855	43.5		
15	35.18		42.59	18.0	1838	72.0	1873	43.0		
		49.60		10.0	66	69.0	1865	42.0		
			43.75			72.6	1000	43.4		
		47.80		12.0	1838	69.0	1853	41.0		
Car Local	33.62			6.0	1880	72.0	1000	40.		
	31.60	45.03	38.31	7.5	. 66	71.0	66	40.0		
	32.59	The second secon		9.5	1872	72.5	1837	39.8		
	33.09		39.46	10.5	1880	69.0	1841	39.0		
			39.58	The state of the s	1000	70.7	1041	40.0		
	32.28			6.5	1880	71.0	1843	38.		
	32.14	43.97		9.5	1871					
	29.85			5.5		69.0	1867	38.0		
	29.83			0.0		65.5	1850	37.8		
	31.25				1839	64.5	1856	37.6		
			37.31	14.0		65.0	1850	37.4		
CC 4.44.14	31.44			7.1	1015	67.0	4.0-0	37.6		
0.00	31.64		37.33	5.0	1845	67.0	1870	37.		
	29.04		37.84	-0.5	1070	72.0	1864	36.8		
N CONTRACTOR			35.90	2.0	1872	76.5		36.		
	28.55		35.76	6.5	1845	72.5	1837	36.		
	30.33			-1.0	6.	72.5	66	36.		
		A company of the comp	36.95			72.1		36.4		
		44.95		4.0	1876	72.0	1864	35.		
	30.61	43.00	36.80	8.0	1859	61.0	1842, 1873	35.		
_		42.18	36.46	- 2.5	1871	59.0	1877	35.		
5		41.33	네다가 나왔다면 하다 하다 하다.	2.5	66	61.0	1879	35.		
	29.56	•	35.72	3.5	1859	62.0	1861	35.		
14.	30.28	42.67	36.47	3.1		63.0		35.4		

1836-1882	Mean Values for each Day.			Extreme Maxima and Minima observed on each Day of the Year.				
	Min.	Max.	Mean.	Min.	Year.	Max.	Year.	
Dec. 7	28.00	40.23	34.11	-11.0	1882	63.0	1851	
8	27.79	39.11	33.49	- 4.0	6.6	65.0	1861	
9	25.07	35.35	30.21	- 5.0	1876	74.5	6.6	
10	23.89	36.06	29.97	0.0	1868	68.0	4.6	
11	28.19	37.61	32.90	-11.0	66	68.0	1873	
	26.59	37.67	32.13	-6.2		67.7		
12	25.54	37.15	31.34	- 0.5	1868	68.5	1877	
13	26.25	36.70	31.47	4.0	1865	62.5	1881	
14	23.46	33.79	28.62	- 1.0	66	59.0	1861	
15	23.57	33.46	28.51	2.5	1851	67.5	1877	
16	24.29	34.83	29.56	- 0.5	66	62.0	66	
	24.62	35.18		-0.1		63.9		
17	25.10	36.91	31.00	2.5	1875	67.0	1877	
18	25.76	38.87	32.31	1.0	1876	69.0	66	
19	26.37	38 10	32.23	0.5	1863	67.5	66	
20	23.51	35.84	29.67	- 2.0	1871	65.0		
21	24.84	36.97	30.90	2.0	1865	66.0	66	
	25.11	37.34	31.22	-1.0		66.9		
22	22.64	33.86	28.25	-14.0	1872	62.0	1877	
23	22.51	35.34	28.92	7.0	1870	61.0	1875	- []
24	23.90	36.62	30.26	-19.5	1872	66.0		
25	25.42	37.95	31.68	-11.0	4.6	70.0	1867	
26	25.63	38.06	31.84	- 5.0	6.6	65.0	1875	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	24.02	36.36	30.19	-11.3		64.8		
27				- 6.0	1872	65.0	1846	
					1880	59.0	1862	
29	25.83	37.49	31.66	-18.0	66	64.0	1851	
30		36.73	29.99	- 8.0	66	66.0	1875	
31			31.34	-10.5	1863	73.5	66	
			31.50	-9.7		65.5		

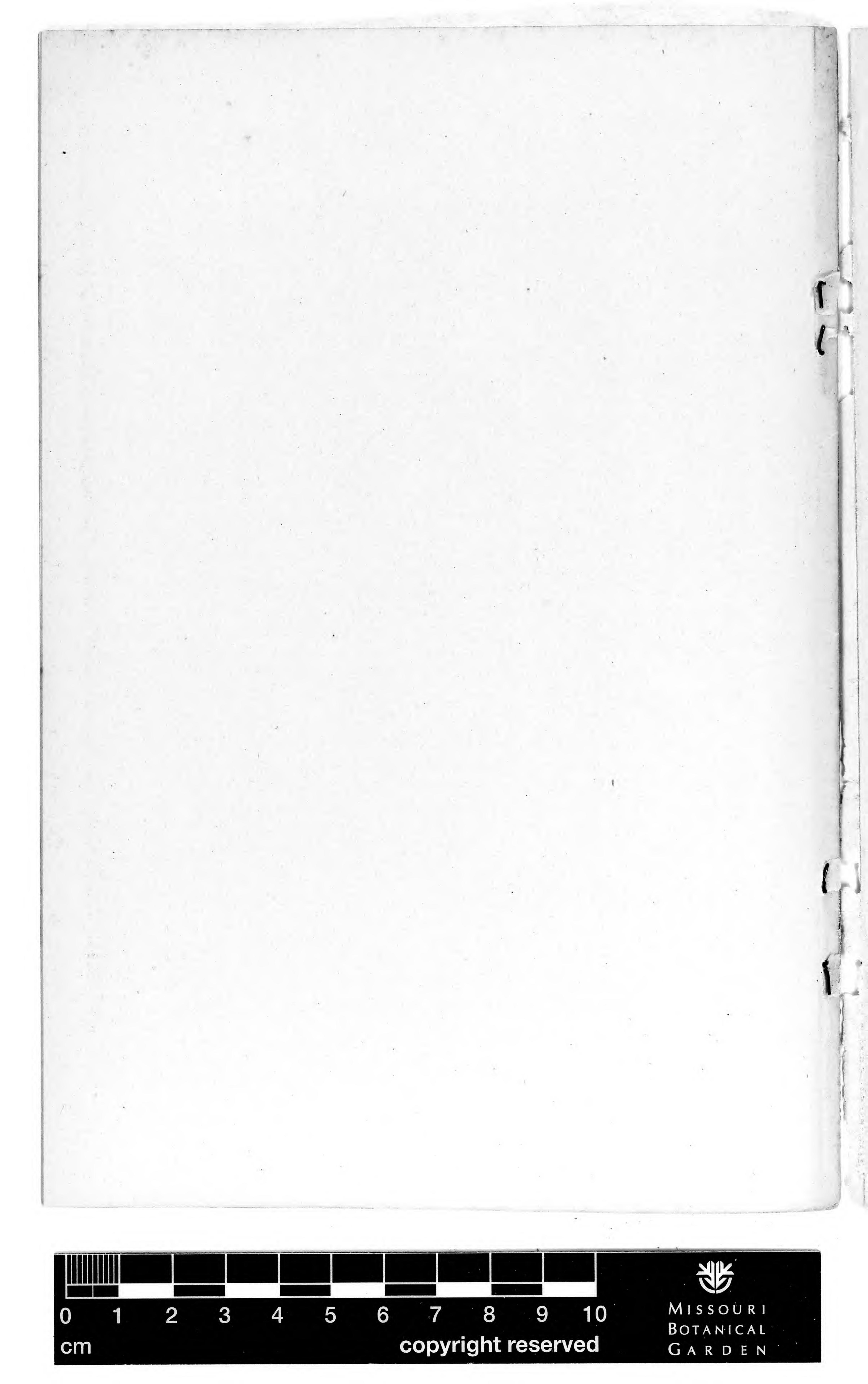
The annexed diagram, for the construction of which I am indebted to Dr. G. Hambach, represents the principal results of these tables. The perpendicular lines divide the year into 73 periods of 5 days each, while the horizontal ones mark the degrees. The central full-faced curve indicates the Mean Temperature of the penthemeral periods of the 47 years, as actually found, while the dotted line represents the supposed real Mean Temperature as suggested in the last column of these tables. The uppermost curve shows the Highest Temperatures and the lowest curve the Lowest Temperatures observed in those same penthemeral periods within the same number of years. It will be noticed that while the points of Mean Temperature occupy the centre of each period, the Maxima and Minima do not show in the middle of the spaces, but on that one of the 5 days of the period on which they actually did occur.

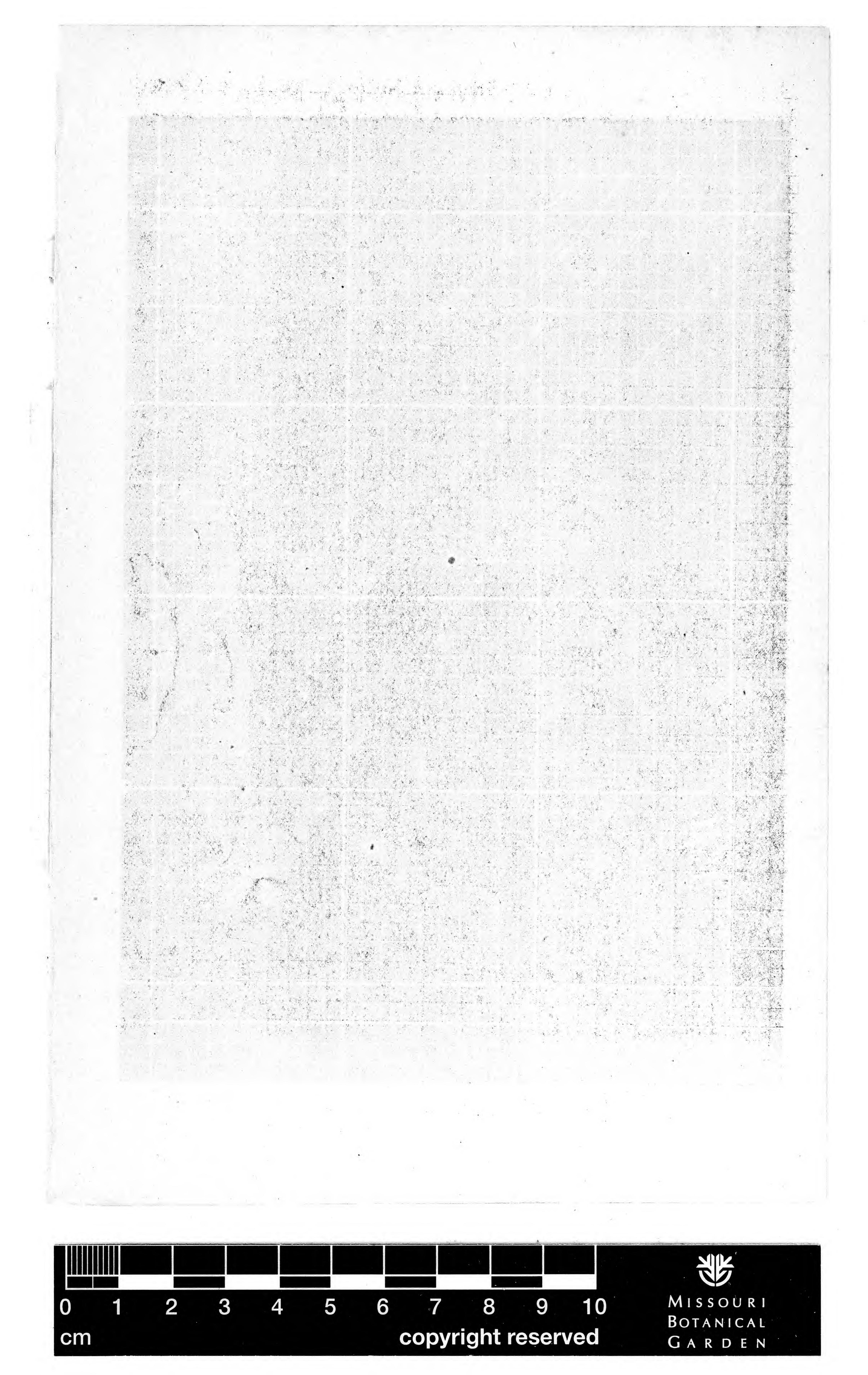


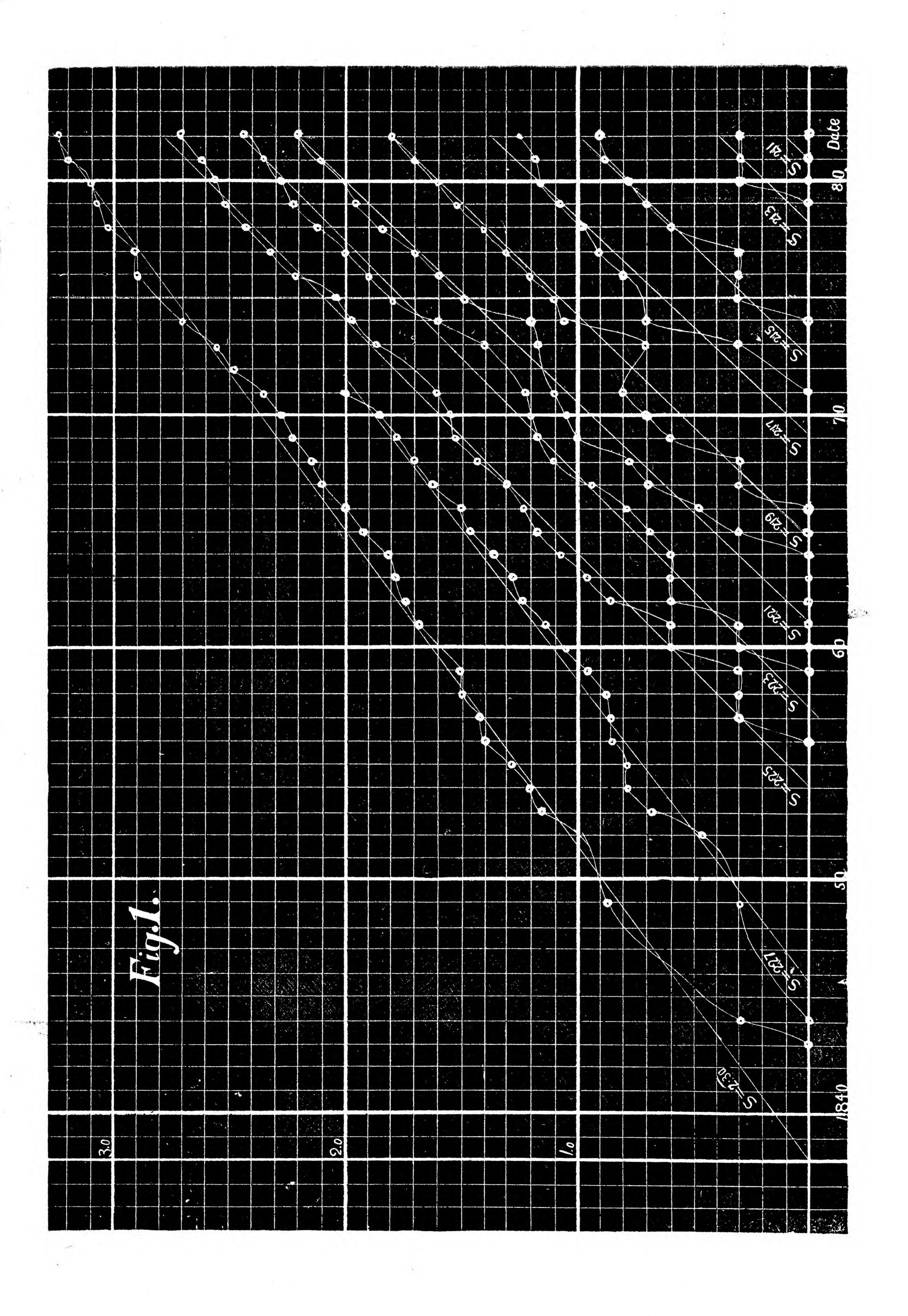


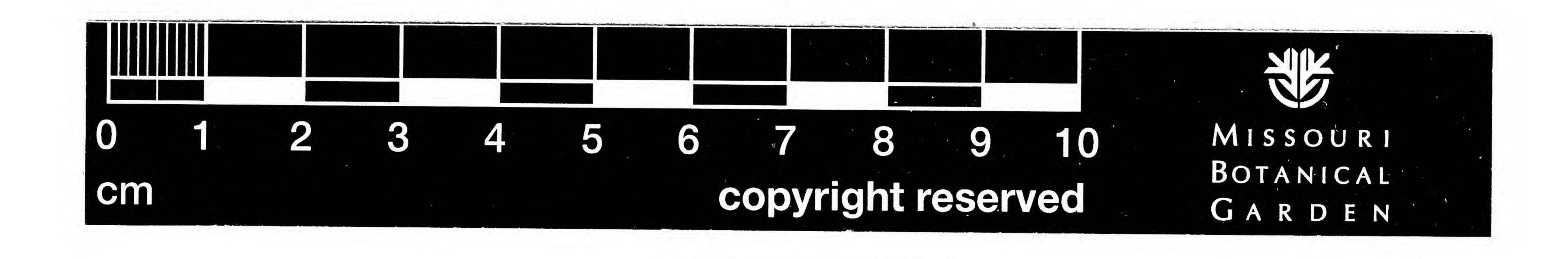


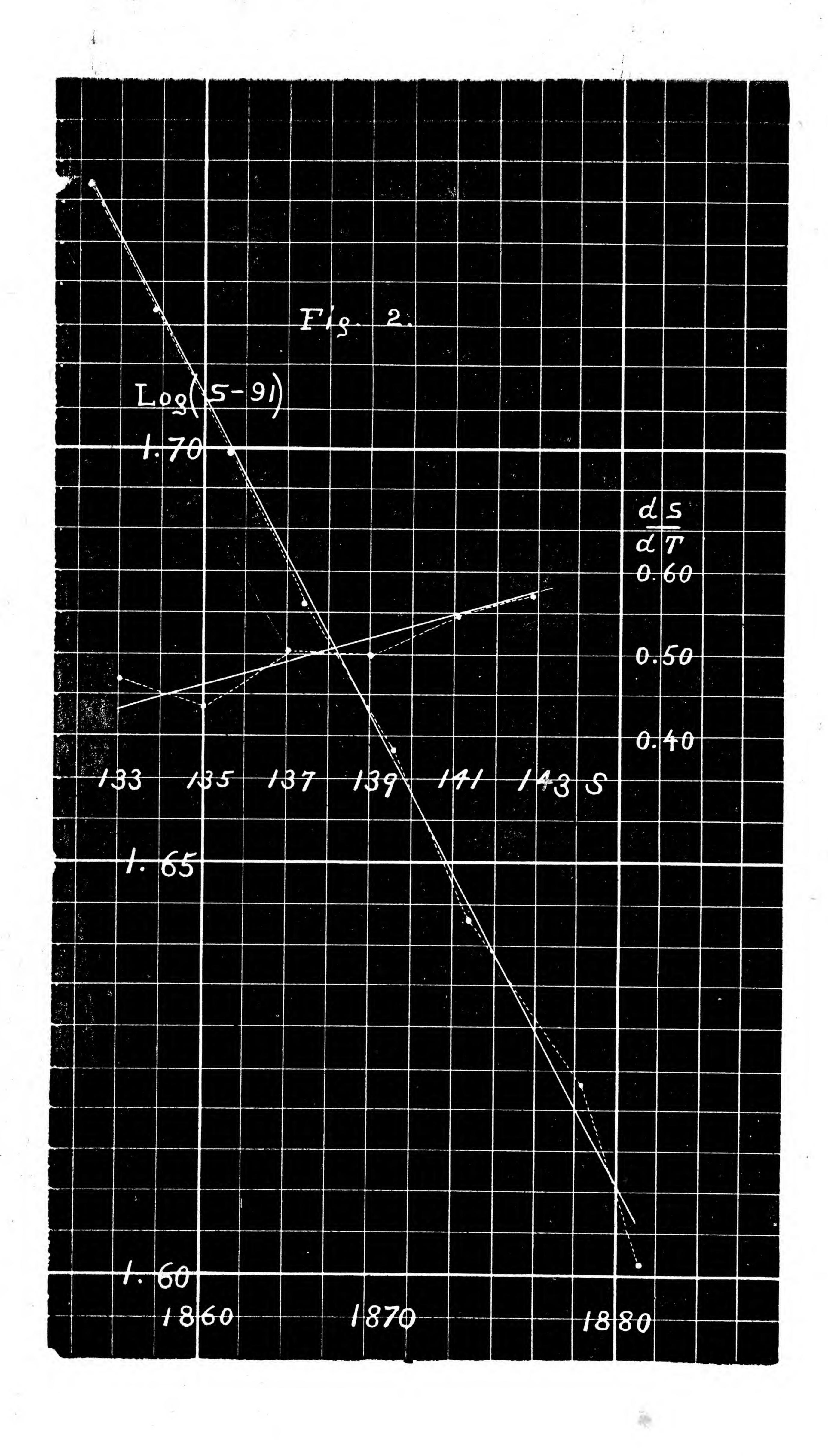














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